

CommScope Technologies, LLC TEST REPORT

SCOPE OF WORK

Emissions Testing For Class II Permissive Change on Model RPM-A5A11-B02 in new host model RP5200

REPORT NUMBER

104601893BOX-011

ISSUE DATE

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May 9, 2021 May 25, 2021

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143

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EMISSIONS TEST REPORT

(FULL COMPLIANCE)

Report Number: 104601893BOX-011 Project Number: G104601893

Report Issue Date: 05/09/2021 Report Revision Date: 05/25/2021

Model(s) Tested: RPM-A5A11-B02 in new host RP5200

Model(s) Partially Tested: None Model(s) Not Tested but declared equivalent by the client: None

Standards: CFR47 FCC Part 24 (05/2021), Class II Permissive Change

Tested by:
Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719
USA

Client:
CommScope Technologies LLC
900 Chelmsford St.
Lowell, MA 01851
USA

Report prepared by

Report reviewed by

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Report Number: 104601893BOX-011

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

2 Test Summary

Section	Test full name	Result
3	Client Information	
4	Description of Equipment Under Test and Variant Models	
5	System Setup and Method	
6	Maximum Peak Output Power and Human RF exposure CFR47 FCC Parts 2.1046 and 24.232(a-b)	Pass
7	Band Edge Compliance CFR47 FCC Parts 2.1051, 2.1053, and 24.238(a-b)	Pass
8	Frequency Stability Over Voltages CFR47 FCC Parts 2.1055 and 24.235	Pass
9	Transmitter Spurious Emissions CFR47 FCC Parts 2.1051, 2.1053, 2.1057 and 24.238(a-b)	Pass
10	Revision History	

Note: This evaluation is for Class II Permissive Change based on the use of new host, model RP5200.

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Client Information

This EUT was tested at the request of:

Client: CommScope Technologies LLC

> 900 Chelmsford St. Lowell, MA 01851

USA

Contact: Mr. Kevin Craig Telephone: (978) 250-2678

Fax: None

kevin.craig@commscope.com Email:

Description of Equipment Under Test and Variant Models

CommScope Telecommunications (China) Ltd. Manufacturer:

68 Su Hong Xi Lu, Suzhou Industrial Park.

Suzhou, Jiangsu, 215021, China

Equipment Under Test					
Description	Manufacturer	Mode	el Number	Serial Number	
Band 2 Radio Module	CommScope Technological	gies LLC	RPM-A5A11-B02	19513000008	
Onecell Radio Point	CommScope Technological	gies LLC	RP5200	05321060064	

Receive Date:	03/24/2021	
Received Condition:	Good	
Type:	Production	

Description of Equipment Under Test (provided by client)

The Radio Module is band specific using the Analog devices RF Agile Transceiver IC, AD936x. The device combines an RF front end with a flexible mixed-signal baseband section and integrated frequency synthesizers providing a configurable digital interface to the processor. The Radio Module also contains a band specific front end, band specific antenna and required power rails. All power rails required are derived from the 12 VDC bus supplied by the Baseband card. The reference frequency for the radio IC is 38.4 MHz is derived from the from an OCXO which is disciplined from a 1588 reference clock.

It supports bandwidths of 5, 10, 15, and 20 MHz with four modulations; TM1.1-QPSK, TM3.2-16QAM, TM3.1-64QAM, and TM3.1a-256QAM. The radio is fixed.

Description of Radio Host (provided by client)

The OneCell® RP5200 family is factory configurable with 2 – 4 Radios Modules mounted to a Baseband card. The same PCB's will be used in both indoor and outdoor version of the radio point. The device is fixed.

The baseband card is the host for the modular radios. It contains a two ethernet PHY's with one supporting 100M/1G/2.5G/5G/10G ethernet and the other supporting 100M/1G. The main processor is Zylinx Ultrascale+ MPSoC with 2 GB DDR3 and 4 GB Flash memory. The baseband PCBA converts POE power to +12 VDC bus voltage require as input to the radio modules.

Equipment Under Test Power Configuration					
Rated Voltage Rated Current Rated Frequency Number of Phases					
48 VDC	0.960 mA per pair max	DC	N/A		

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Operating modes of the EUT:

No.	Descriptions of EUT Exercising
	Pre-programmed to transmit at Low, Mid, and High channels at four different modulations, TM1.1-QPSK, TM3.2-16QAM, TM3.1-64QAM, and TM3.1a-256QAM.

Software used by the EUT:

No.	Descriptions of EUT Exercising
1	RP5200 Diagnostics Ver 1009

Radio	Radio/Receiver Characteristics				
Frequency Band(s)	1930-1990 MHz				
Modulation Type(s) TM1.1-QPSK, TM3.2-16QAM, TM3.1-64 QAM, TM3.1a- 256QAM					
Maximum Output Power (conducted):	22.85 dBm (Conducted)				
Test Channels Low, Middle, High Channels of 5 MHz, 10 MHz, 15 MHz, ar 20 MHz Bandwidths, Single Channel operation only					
Occupied Bandwidth 18.017 MHz (Worst-case)					
MIMO Information (# of Transmit and	2x2 MIMO using cross polarized antennas and uncorrelated				
Receive antenna ports)	data streams				
Equipment Type	Module in a host				
Antenna Type and Gain Detachable Antenna: +4 dBi (as provided by the client. Intertek takes no responsibility for the accuracy of this information. Actual antenna gain will be determined at the of licensing)					

Variant Models:

The following variant models were not tested as part of this evaluation, but have been identified by the manufacturer as being electrically identical models, depopulated models, or with reasonable similarity to the model(s) tested. Intertek does not make any claims of compliance for samples or variants which were not tested.

None

System Setup and Method

	Cables						
ID	Description	Length (m)	Shielding	Ferrites	Termination		
	LAN (POE Power Cable)	2.58	Shielded	None	POE P/S		
	LAN (Communication)	9.00	Shielded	None	Laptop		

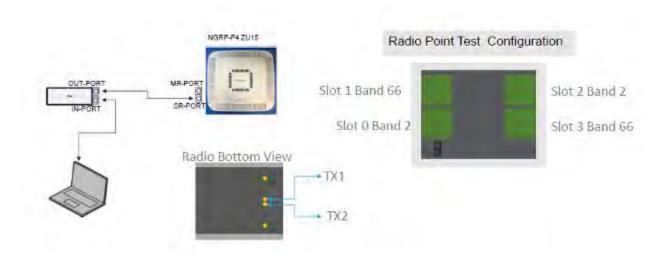
Support Equipment				
Description	Manufacturer	Model Number	Serial Number	
Laptop	Dell	LATITUDE	None	
Power Device Analzyer	Sifos Technologies	PDA-604A	604A0033	

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5.1 Method:

Configuration as required by ANSI C63.26-2015, KDB 662911, and CFR47 FCC Part 24 (05/2021).

5.2 **EUT Block Diagram:**



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Maximum Peak Output Power and Human RF exposure

6.1 Method

Tests are performed in accordance with CFR47 FCC Parts 2.1046 and 24, KDB662911, and ANSI C63.26 Section 5.2.4.4.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

6.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/22/2021	01/22/2022
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252676002	02/19/2021	02/19/2022
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021
DAV005	Weather Station Vantage Vue	Davis	6250	MS191218083	02/07/2021	02/07/2022

Software Utilized:

Name	Manufacturer	Version
None	1	

6.3 Results:

The maximum conducted output power was measured to be 22.85 dBm, which is much less than the EIRP limit of 24.232(a-b). The sample tested was found to Comply. Antenna gain limitations will depend on geographical locations and Height Above Average Terrain (HAAT). Output power from the two antenna ports was not summed since the data streams are uncorrelated and the antennas are cross polarized.

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§24.232(a-b):

- (a)(1) Base stations with an emission bandwidth of 1 MHz or less are limited to 1640 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.
- (2) Base stations with an emission bandwidth greater than 1 MHz are limited to 1640 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT, except as described in paragraph (b) below.
- (3) Base station antenna heights may exceed 300 meters HAAT with a corresponding reduction in power; seeTables 1 and 2 of this section.
- (4) The service area boundary limit and microwave protection criteria specified in §§24.236 and 24.237 apply.

TABLE 1—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS, WITH **EMISSION BANDWIDTH OF 1 MHz OR LESS**

HAAT in meters	Maximum EIRP watts
≤300	1640
≤500	1070
≤1000	490
≤1500	270
≤2000	160

TABLE 2—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS, WITH **EMISSION BANDWIDTH GREATER THAN 1 MHz**

HAAT in meters	Maximum EIRP watts/MHz
≤300	1640
≤500	1070
≤1000	490
≤1500	270
≤2000	160

(b)(1) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, with an emission bandwidth of 1 MHz or less are limited to 3280 watts equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

(2) Base stations that are located in counties with population densities of 100 persons or fewer per square mile, based upon the most recently available population statistics from the Bureau of the Census, with an emission bandwidth greater than 1 MHz are limited to 3280 watts/MHz equivalent isotropically radiated power (EIRP) with an antenna height up to 300 meters HAAT.

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(3) Base station antenna heights may exceed 300 meters HAAT with a corresponding reduction in power; seeTables 3 and 4 of this section.

- (4) The service area boundary limit and microwave protection criteria specified in §§24.236 and 24.237 apply.
- (5) Operation under this paragraph (b) at power limits greater than permitted under paragraph (a) of this section must be coordinated in advance with all broadband PCS licensees authorized to operate on adjacent frequency blocks within 120 kilometers (75 miles) of the base station and is limited to base stations located more than 120 kilometers (75 miles) from the Canadian border and more than 75 kilometers (45 miles) from the Mexican border.

TABLE 3—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS, WITH **EMISSION BANDWIDTH OF 1 MHz OR LESS**

HAAT in meters	Maximum EIRP watts
≤300	3280
≤500	2140
≤1000	980
≤1500	540
≤2000	320

TABLE 4—REDUCED POWER FOR BASE STATION ANTENNA HEIGHTS OVER 300 METERS, WITH **EMISSION BANDWIDTH GREATER THAN 1 MHz**

HAAT in meters	Maximum EIRP watts/MHz
≤300	3280
≤500	2140
≤1000	980
≤1500	540
≤2000	320

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Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1932.50	ANT0	21.35
		ANT1	21.47
Mid	1960.00	ANT0	22.02
		ANT1	22.23
High	1987.50	ANT0	21.94
		ANT1	22.18

Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1935.00	ANT0	21.79
		ANT1	22.10
Mid	1960.00	ANT0	21.99
		ANT1	22.25
High	1985.00	ANT0	21.60
		ANT1	22.07

Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1937.50	ANT0	22.69
		ANT1	22.85
Mid	1960.00	ANT0	22.37
		ANT1	22.79
High	1982.50	ANT0	22.00
		ANT1	22.33

Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1940.00	ANT0	20.19
		ANT1	22.24
Mid	1960.00	ANT0	21.74
		ANT1	22.09
High	1980.00	ANT0	21.75
_		ANT1	22.20

Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1932.50	ANT0	20.62
		ANT1	20.93
Mid	1960.00	ANT0	21.60
		ANT1	21.77
High	1987.50	ANT0	21.14
_		ANT1	21.63

Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1935.00	ANT0	20.98
		ANT1	21.43
Mid	1960.00	ANT0	21.31
		ANT1	21.35
High	1985.00	ANT0	21.02
		ANT1	21.45

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Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3.2-16QAM

0.00	0.00 0 (2 0.00 2), 2 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0			
Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)	
Low	1937.50	ANT0	21.32	
		ANT1	21.47	
Mid	1960.00	ANT0	21.09	
		ANT1	21.29	
High	1982.50	ANT0	21.01	
_		ANT1	21.28	

Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1940.00	ANT0	21.42
		ANT1	21.67
Mid	1960.00	ANT0	21.19
		ANT1	21.52
High	1980.00	ANT0	21.26
		ANT1	21.63

Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1932.50	ANT0	21.14
		ANT1	21.50
Mid	1960.00	ANT0	22.04
		ANT1	22.13
High	1987.50	ANT0	21.78
		ANT1	22.25

Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1935.00	ANT0	21.59
		ANT1	21.96
Mid	1960.00	ANT0	21.97
		ANT1	22.02
High	1985.00	ANT0	21.55
		ANT1	22.10

Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1937.50	ANT0	22.28
		ANT1	22.32
Mid	1960.00	ANT0	21.87
		ANT1	22.21
High	1982.50	ANT0	21.88
_		ANT1	22.27

Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1940.00	ANT0	22.03
		ANT1	22.36
Mid	1960.00	ANT0	21.80
		ANT1	22.06
High	1980.00	ANT0	21.81
		ANT1	22.20

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Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)	
Low	1932.50	ANT0	21.24	
		ANT1	21.50	
Mid	1960.00	ANT0	22.04	
		ANT1	22.15	
High	1987.50	ANT0	21.88	
_		ANT1	22.18	

Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM_

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1935.00	ANT0	21.65
		ANT1	21.92
Mid	1960.00	ANT0	21.93
		ANT1	22.07
High	1985.00	ANT0	21.63
		ANT1	22.08

Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

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Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1937.500	ANT0	22.23
		ANT1	22.17
Mid	1960.00	ANT0	21.82
		ANT1	22.19
High	1982.50	ANT0	21.80
		ANT1	22.15

Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Output Power (dBm)
Low	1940	ANT0	22.03
		ANT1	22.30
Mid	1960	ANT0	21.72
		ANT1	22.03
High	1980	ANT0	21.81
_		ANT1	21.76

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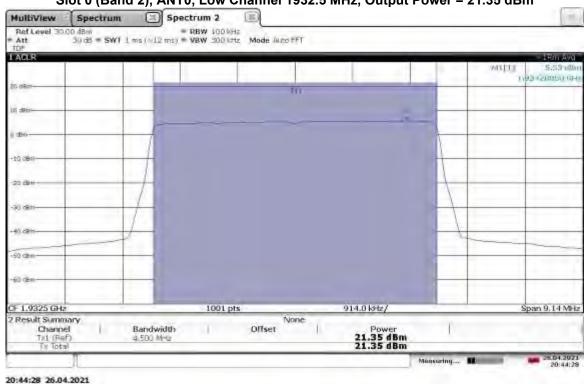
6.4 Setup Photograph:

Confidential

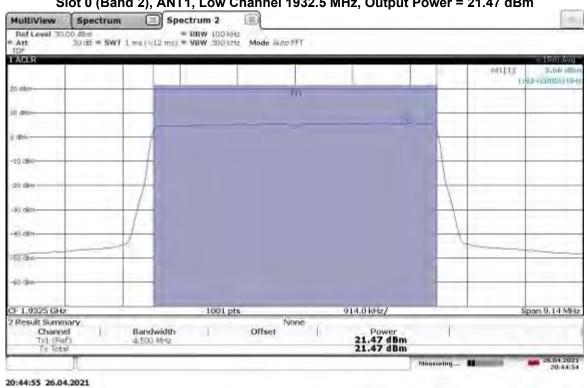
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6.5 Plots/Data:

TM1.1-QPSK_5 MHz Bandwidth Slot 0 (Band 2), ANT0, Low Channel 1932.5 MHz, Output Power = 21.35 dBm



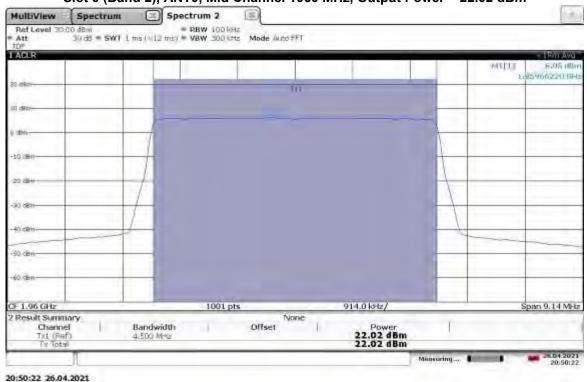
TM1.1-QPSK_5 MHz Bandwidth Slot 0 (Band 2), ANT1, Low Channel 1932.5 MHz, Output Power = 21.47 dBm



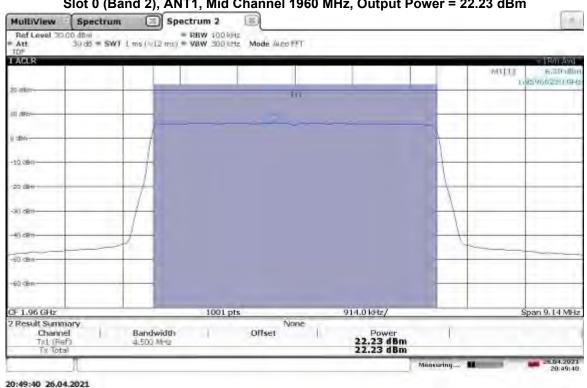
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TM1.1-QPSK_5 MHz Bandwidth Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 22.02 dBm



TM1.1-QPSK_5 MHz Bandwidth Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.23 dBm



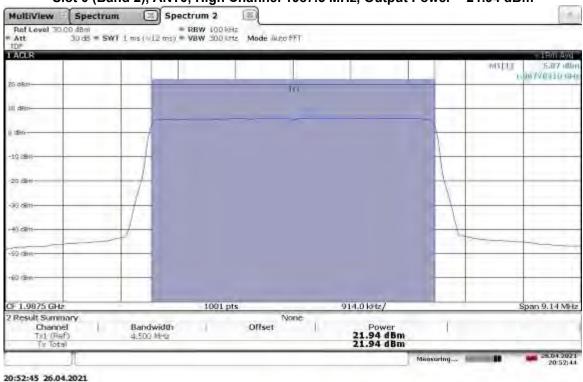
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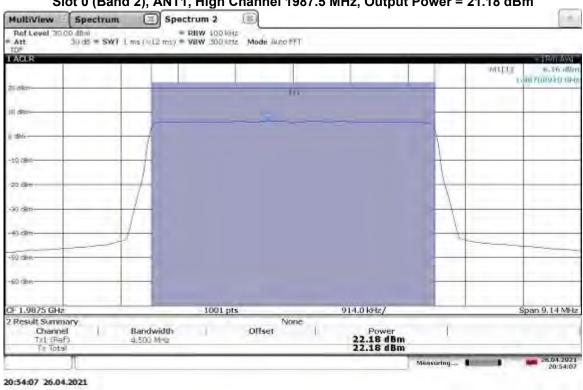
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TM1.1-QPSK_5 MHz Bandwidth Slot 0 (Band 2), ANT0, High Channel 1987.5 MHz, Output Power = 21.94 dBm



TM1.1-QPSK_5 MHz Bandwidth Slot 0 (Band 2), ANT1, High Channel 1987.5 MHz, Output Power = 21.18 dBm

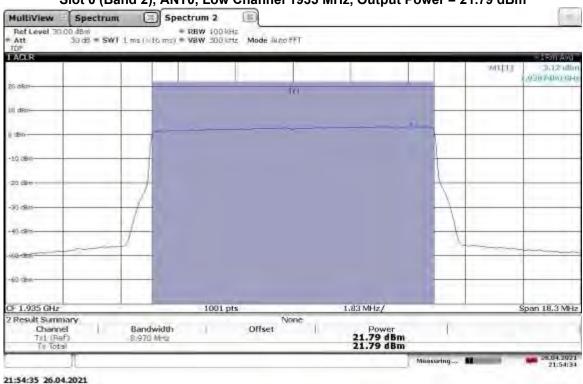


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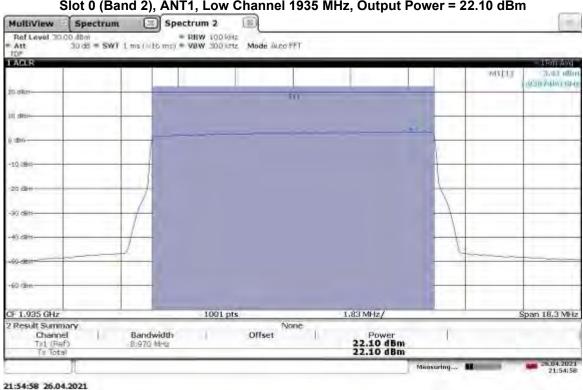
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TM1.1-QPSK_10 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1935 MHz, Output Power = 21.79 dBm



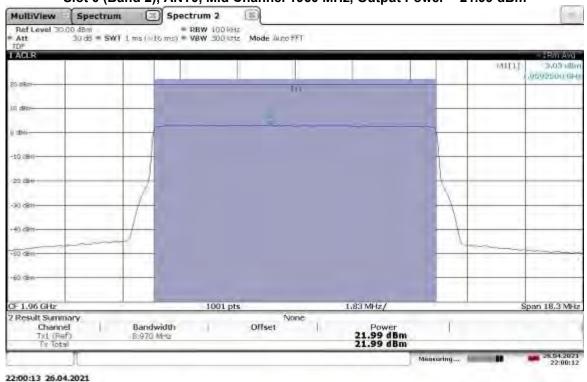
TM1.1-QPSK_10 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1935 MHz, Output Power = 22.10 dBm



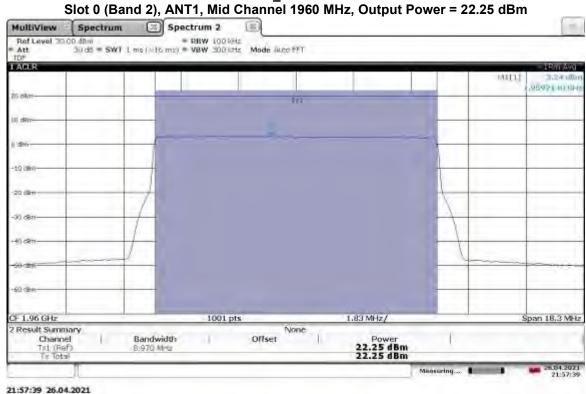
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TM1.1-QPSK_10 MHz Bandwidth Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.99 dBm



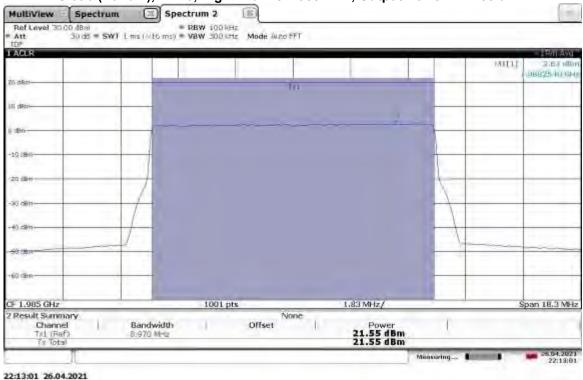
TM1.1-QPSK_10 MHz Bandwidth



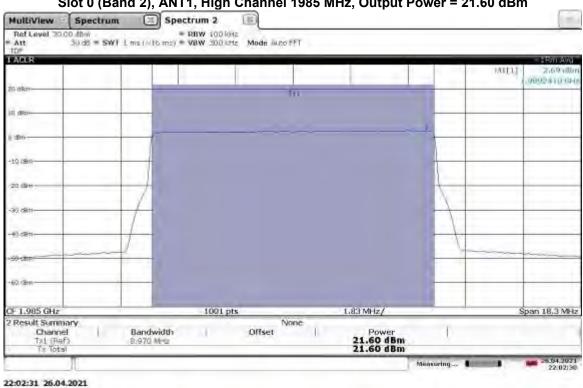
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TM1.1-QPSK_10 MHz Bandwidth Slot 0 (Band 2), ANT0, High Channel 1985 MHz, Output Power = 21.55 dBm



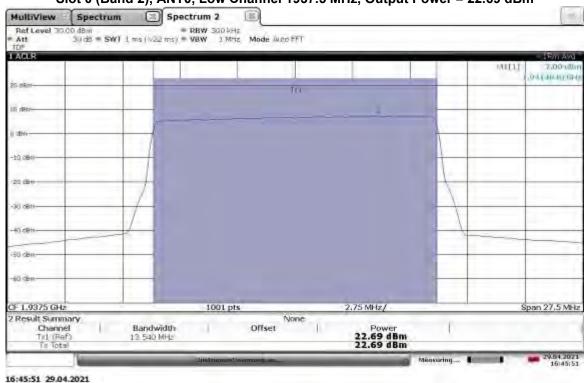
TM1.1-QPSK_10 MHz Bandwidth Slot 0 (Band 2), ANT1, High Channel 1985 MHz, Output Power = 21.60 dBm



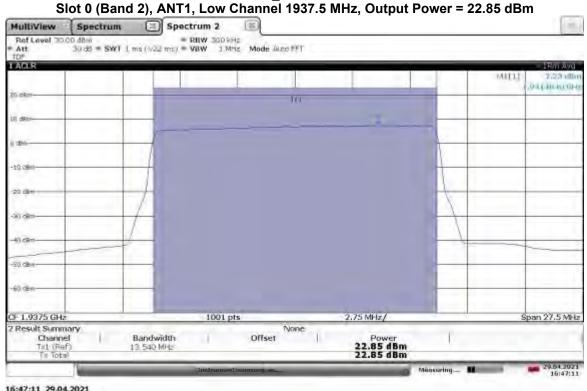
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> TM1.1-QPSK_15 MHz Bandwidth Slot 0 (Band 2), ANT0, Low Channel 1937.5 MHz, Output Power = 22.69 dBm

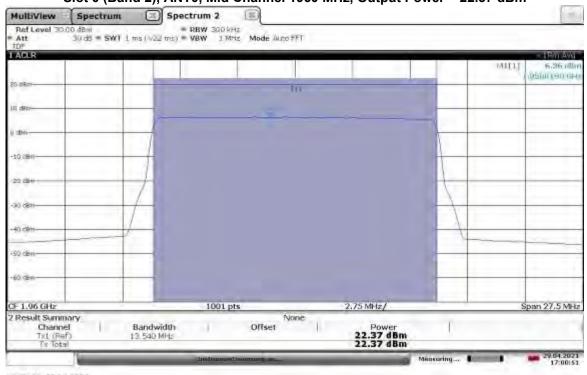


TM1.1-QPSK_15 MHz Bandwidth



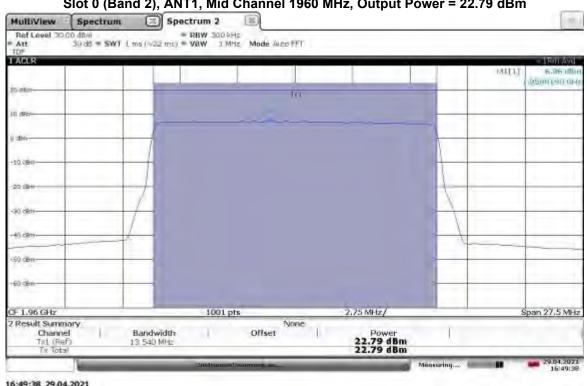
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TM1.1-QPSK_15 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 22.37 dBm



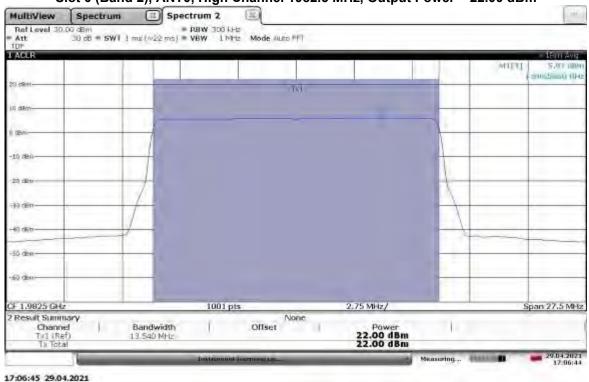
17:00:52 29.04.2021

TM1.1-QPSK_15 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.79 dBm

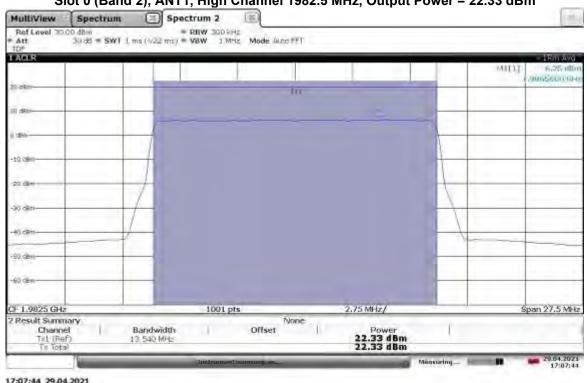


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TM1.1-QPSK_15 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1982.5 MHz, Output Power = 22.00 dBm



TM1.1-QPSK_15 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1982.5 MHz, Output Power = 22.33 dBm

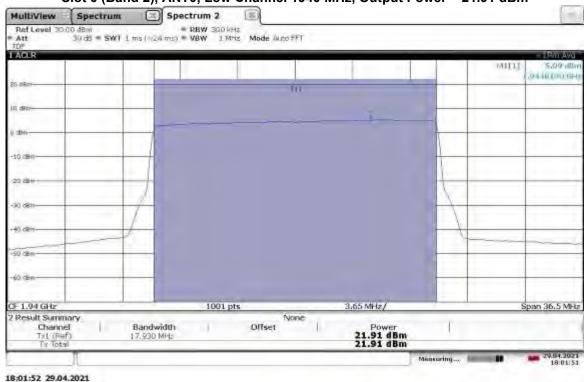


17:07:44 29.04.2021

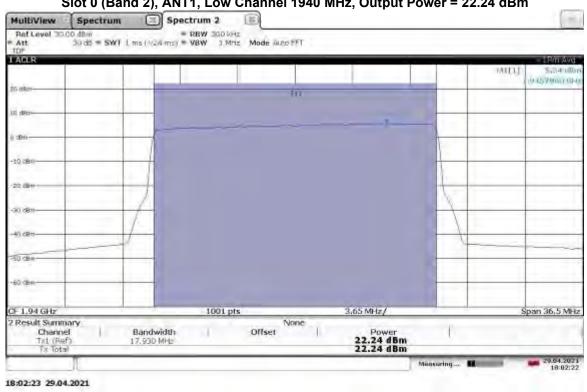
Report Number: 104601893BOX-011 Issue

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TM1.1-QPSK_20 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1940 MHz, Output Power = 21.91 dBm



TM1.1-QPSK_20 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1940 MHz, Output Power = 22.24 dBm

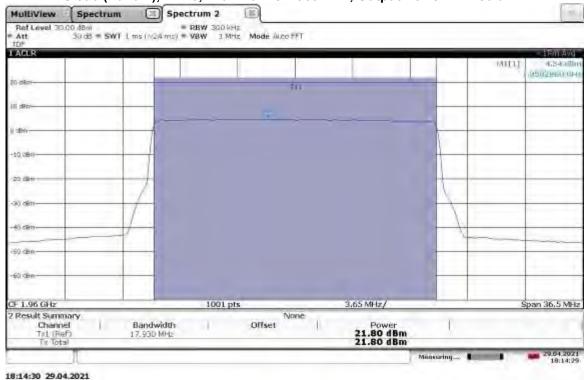


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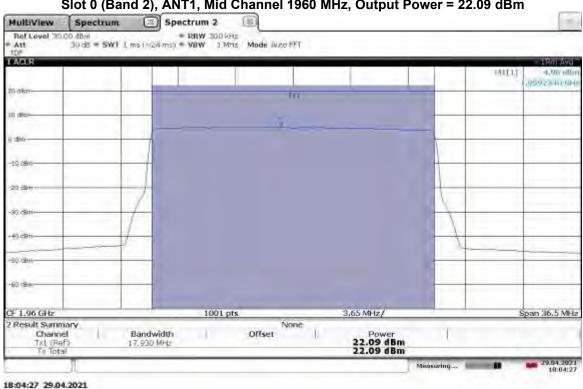
Report Number: 104601893BOX-011 Issued: 0

Issued: 05/09/2021 Revised: 05/25/2021

TM1.1-QPSK_20 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.80 dBm



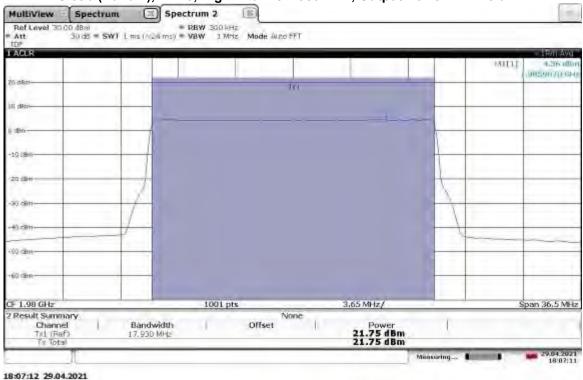
TM1.1-QPSK_20 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.09 dBm



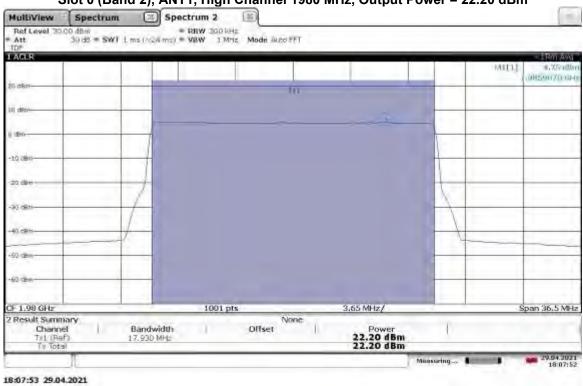
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TM1.1-QPSK_20 MHz Bandwidth Slot 0 (Band 2), ANT0, High Channel 1980 MHz, Output Power = 21.75 dBm

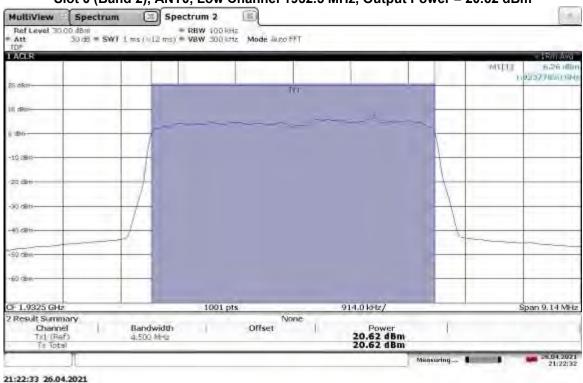


TM1.1-QPSK_20 MHz Bandwidth Slot 0 (Band 2), ANT1, High Channel 1980 MHz, Output Power = 22.20 dBm

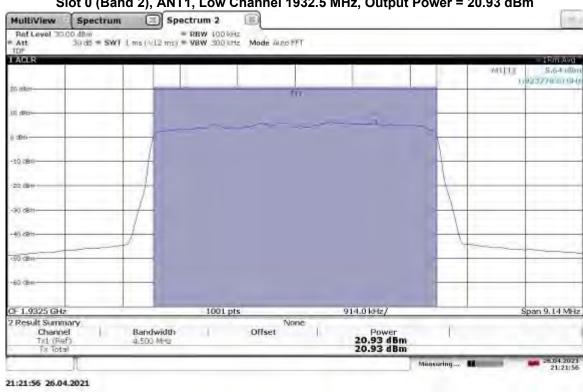


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TM3.2-16QAM_5 MHz Bandwidth Slot 0 (Band 2), ANT0, Low Channel 1932.5 MHz, Output Power = 20.62 dBm

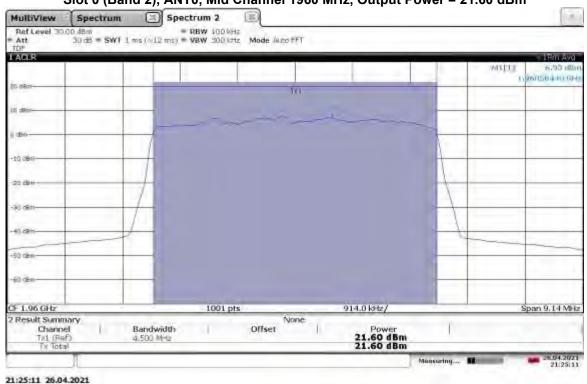


TM3.2-16QAM_5 MHz Bandwidth Slot 0 (Band 2), ANT1, Low Channel 1932.5 MHz, Output Power = 20.93 dBm

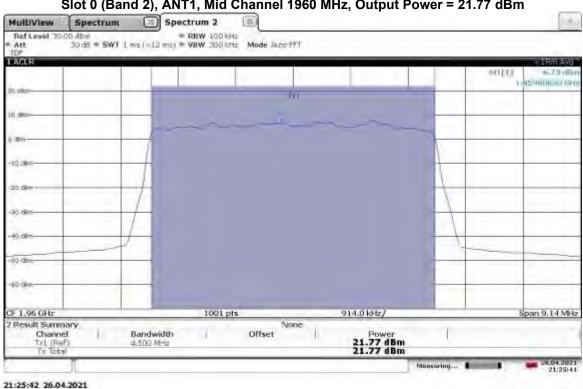


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TM3.2-16QAM_5 MHz Bandwidth Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.60 dBm



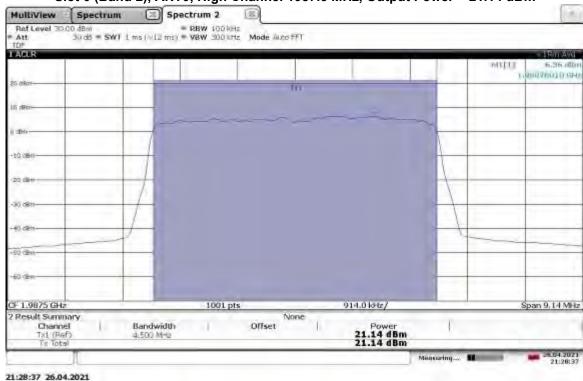
TM3.2-16QAM_5 MHz Bandwidth Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 21.77 dBm



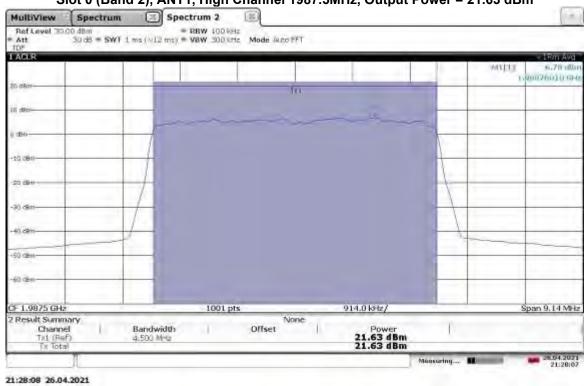
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TM3.2-16QAM_5 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1987.5 MHz, Output Power = 21.14 dBm



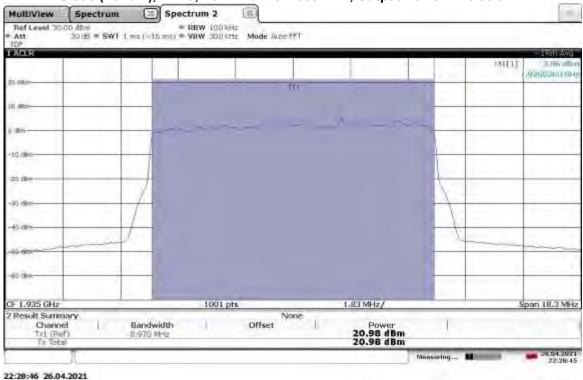
TM3.2-16QAM_5 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1987.5MHz, Output Power = 21.63 dBm



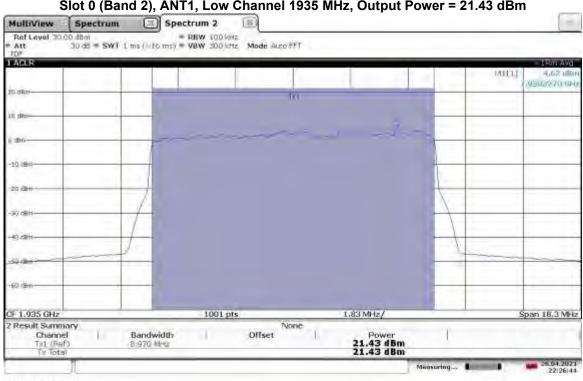
Non-Specific Radio Report Shell Rev. July 2020 Pag Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200 Report Number: 104601893BOX-011 Issued: 05

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TM3.2-16QAM_10 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1935 MHz, Output Power = 20.98 dBm



TM3.2-16QAM_10 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1935 MHz, Output Power = 21.43 dBm



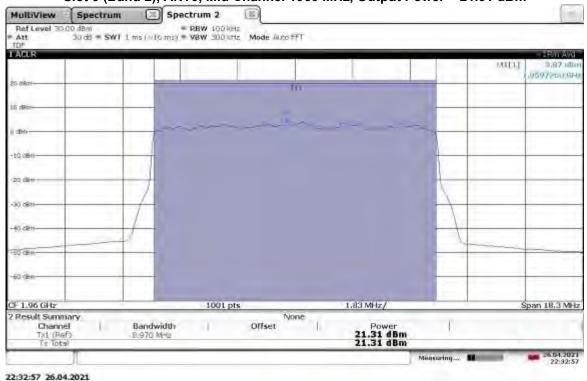
22:26:44 26.04.2021

Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

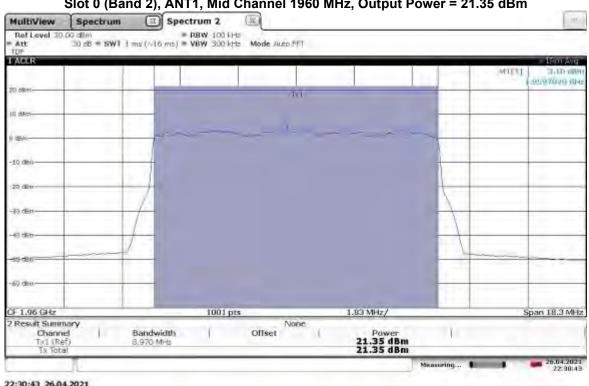
Report Number: 104601893BOX-011 Issued

Issued: 05/09/2021 Revised: 05/25/2021

TM3.2-16QAM_10 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.31 dBm



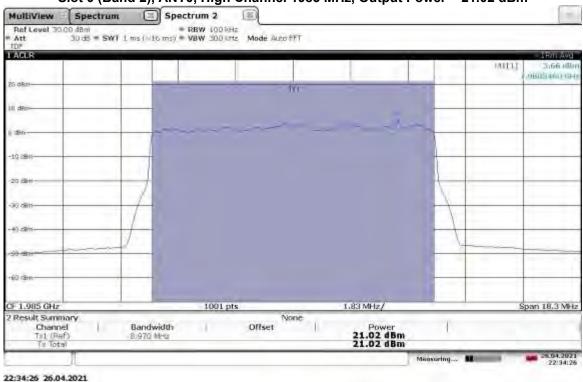
TM3.2-16QAM_10 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 21.35 dBm



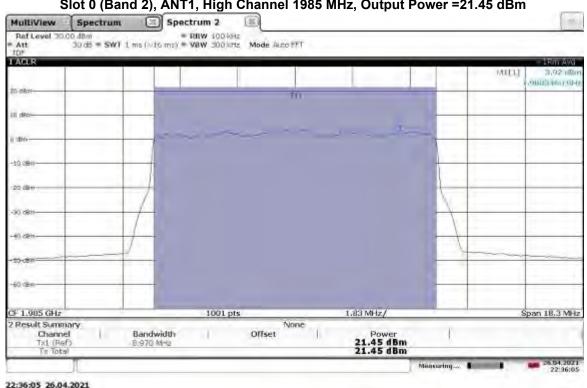
22:30:43 26.04.2021

Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

> TM3.2-16QAM_10 MHz Bandwidth Slot 0 (Band 2), ANT0, High Channel 1985 MHz, Output Power = 21.02 dBm



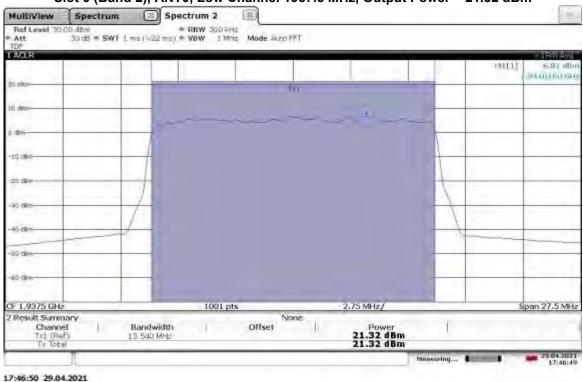
TM3.2-16QAM_10 MHz Bandwidth Slot 0 (Band 2), ANT1, High Channel 1985 MHz, Output Power =21.45 dBm



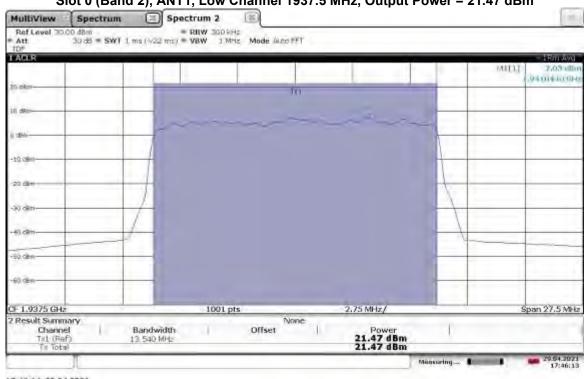
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TM3.2-16QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1937.5 MHz, Output Power = 21.32 dBm



TM3.2-16QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1937.5 MHz, Output Power = 21.47 dBm

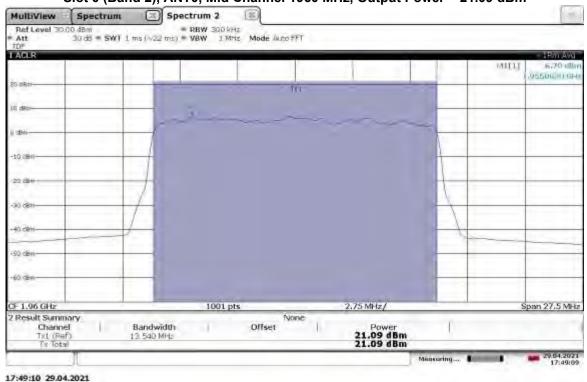


17:46:14 29:04:2021

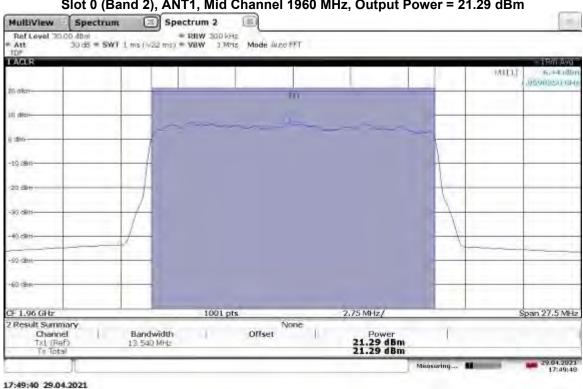
Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

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TM3.2-16QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.09 dBm



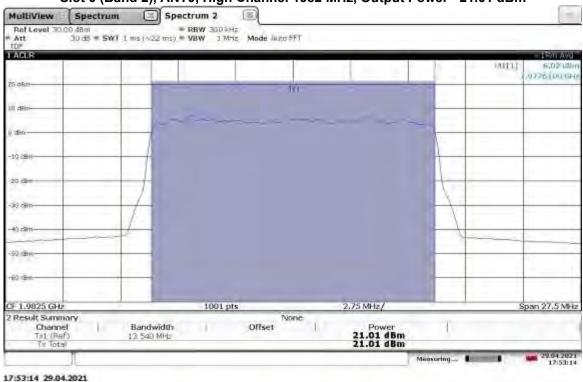
TM3.2-16QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 21.29 dBm



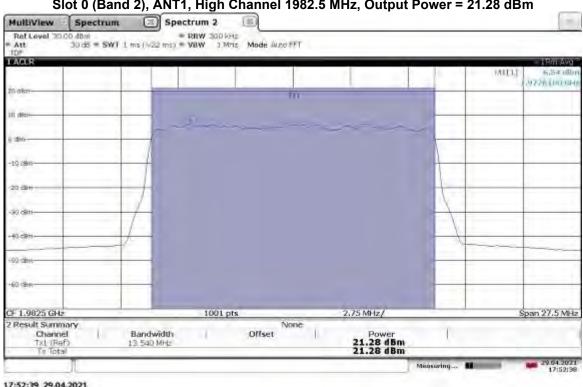
Non-Specific Radio Report Shell Rev. July 2020 Pag Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

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TM3.2-16QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1982 MHz, Output Power =21.01 dBm



TM3.2-16QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1982.5 MHz, Output Power = 21.28 dBm



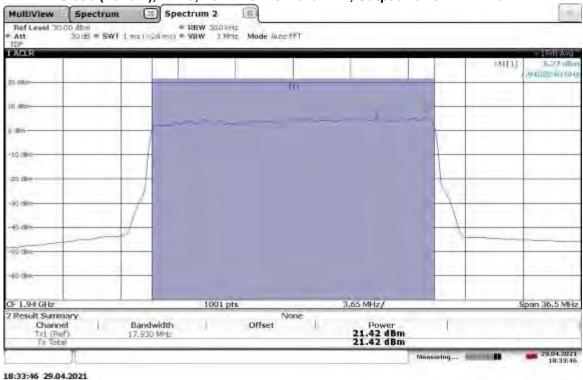
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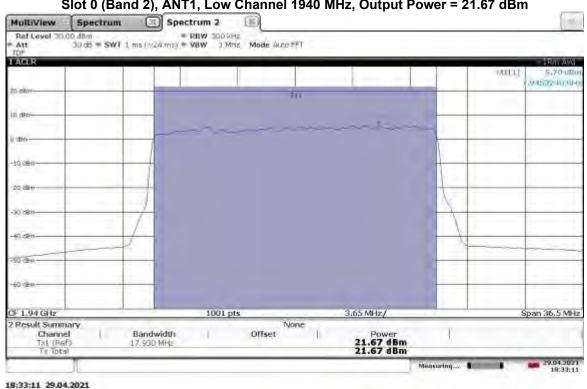
Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

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TM3.2-16QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1940 MHz, Output Power = 21.42 dBm



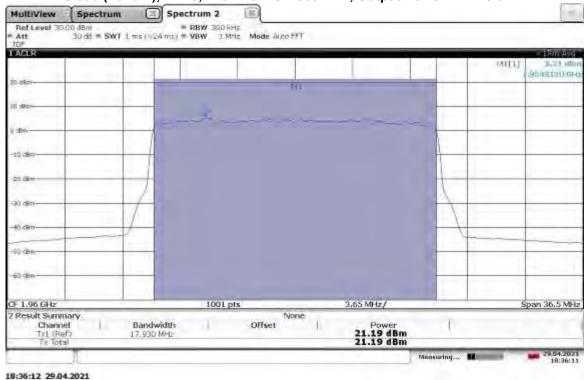
TM3.2-16QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1940 MHz, Output Power = 21.67 dBm



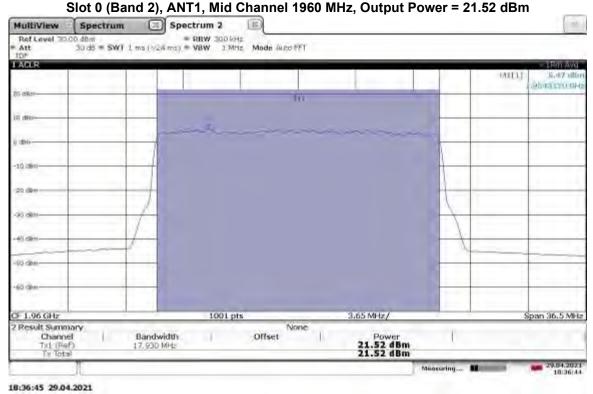
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TM3.2-16QAM_20 MHz Bandwidth Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.19 dBm



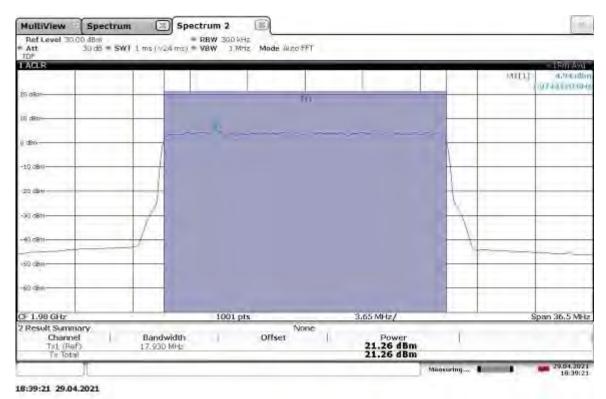
TM3.2-16QAM_20 MHz Bandwidth



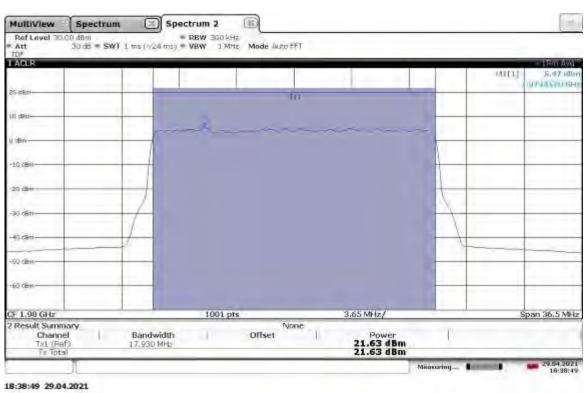
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TM3.2-16QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1980 MHz, Output Power = 21.26 dBm



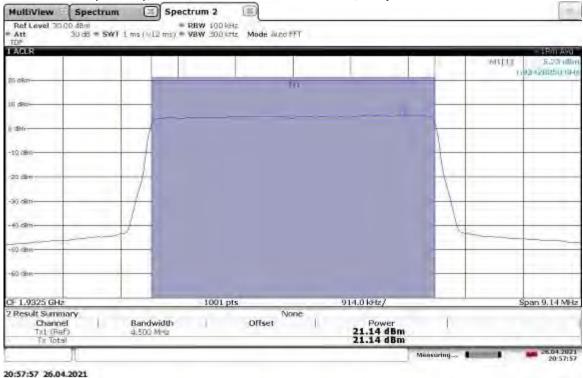
TM3.2-16QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1980 MHz, Output Power = 21.63 dBm



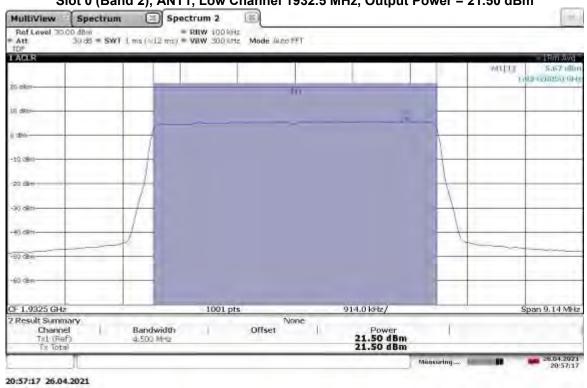
Non-Specific Radio Report Shell Rev. July 2020 Pag Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

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TM3.1-64QAM_5 MHz Bandwidth Slot 0 (Band 2), ANT0, Low Channel 1932.5 MHz, Output Power = 21.14 dBm



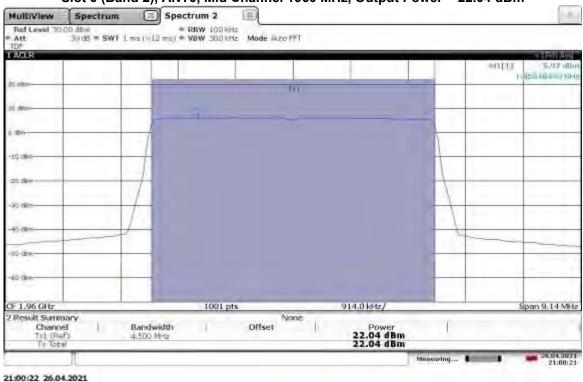
TM3.1-64QAM_5 MHz Bandwidth Slot 0 (Band 2), ANT1, Low Channel 1932.5 MHz, Output Power = 21.50 dBm



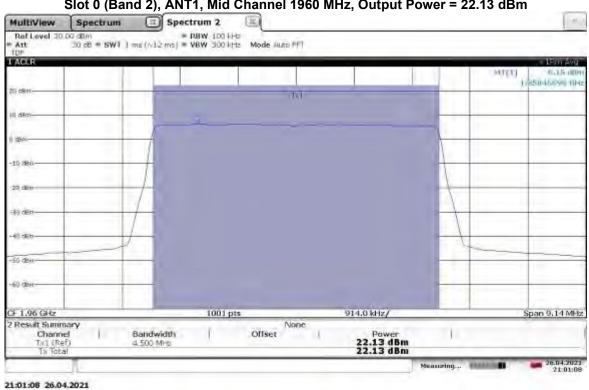
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TM3.1-64QAM_5 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 22.04 dBm



TM3.1-64QAM_5 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.13 dBm

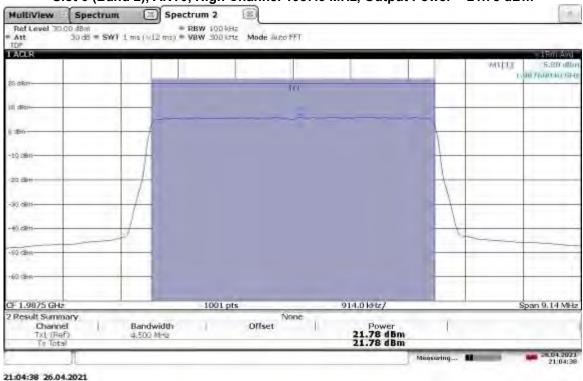


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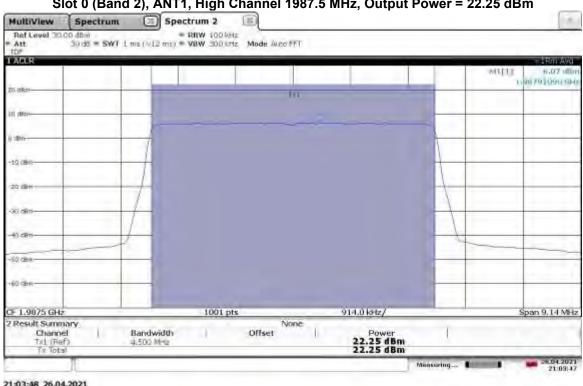
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TM3.1-64QAM_5 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1987.5 MHz, Output Power = 21.78 dBm



TM3.1-64QAM_5 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1987.5 MHz, Output Power = 22.25 dBm

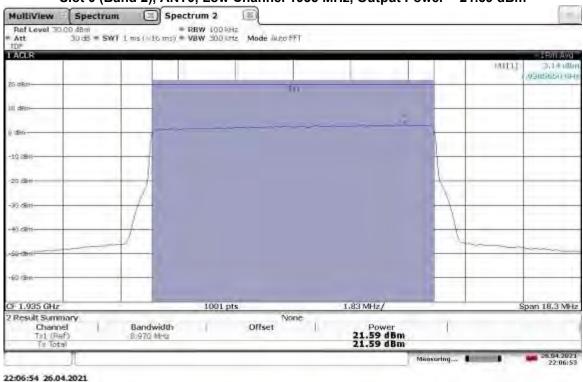


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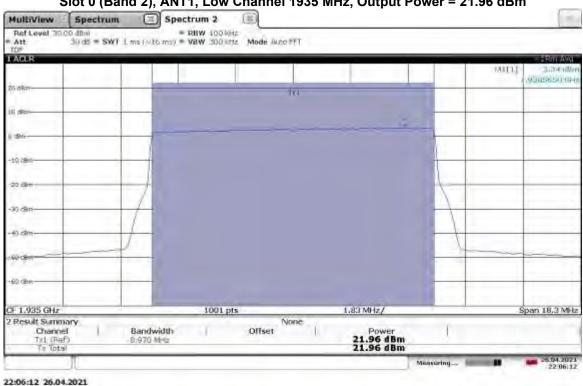
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TM3.1-64QAM_10 MHz Bandwidth Slot 0 (Band 2), ANT0, Low Channel 1935 MHz, Output Power = 21.59 dBm



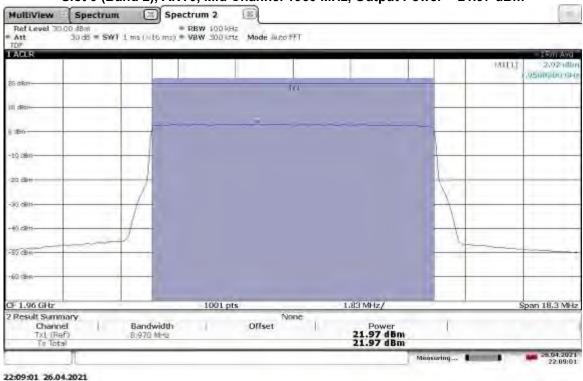
TM3.1-64QAM_10 MHz Bandwidth Slot 0 (Band 2), ANT1, Low Channel 1935 MHz, Output Power = 21.96 dBm



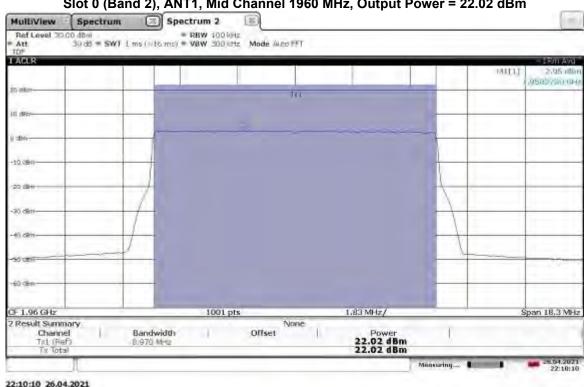
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TM3.1-64QAM_10 MHz Bandwidth Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.97 dBm

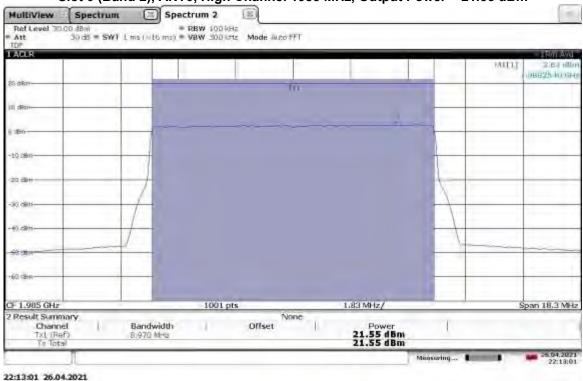


TM3.1-64QAM_10 MHz Bandwidth Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.02 dBm

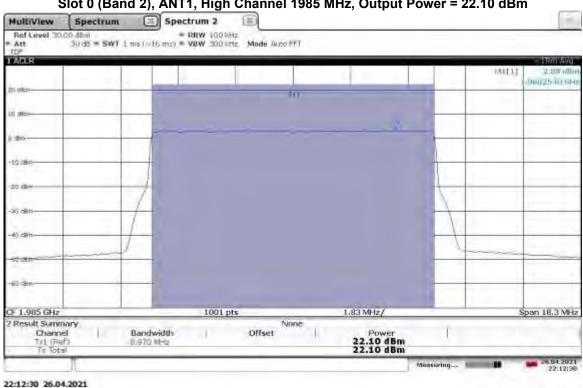


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TM3.1-64QAM_10 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1985 MHz, Output Power = 21.55 dBm



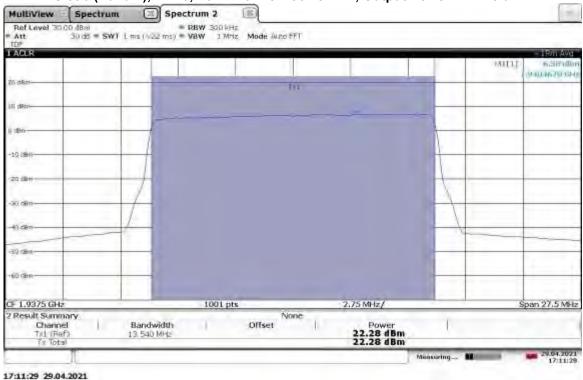
TM3.1-64QAM_10 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1985 MHz, Output Power = 22.10 dBm



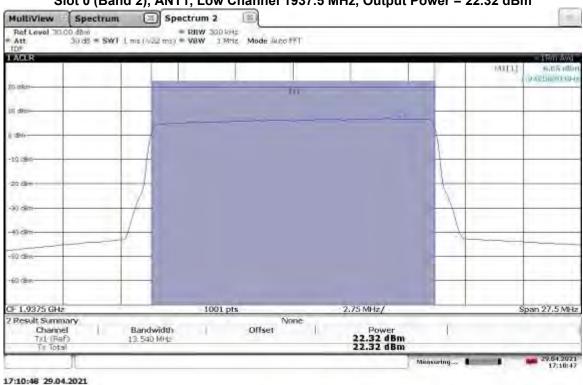
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TM3.1-64QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1937.5 MHz, Output Power = 22.28 dBm



TM3.1-64QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1937.5 MHz, Output Power = 22.32 dBm

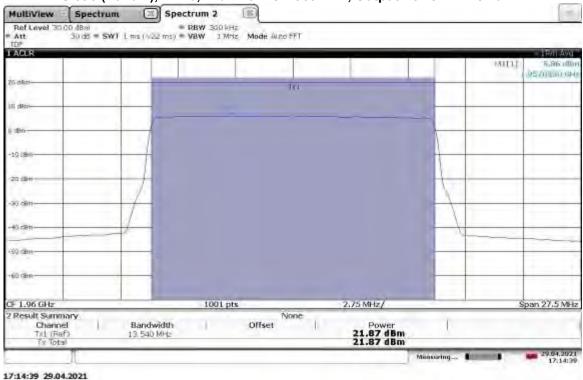


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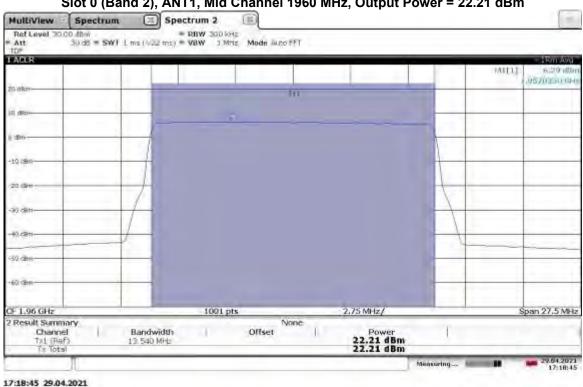
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TM3.1-64QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.87 dBm



TM3.1-64QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.21 dBm

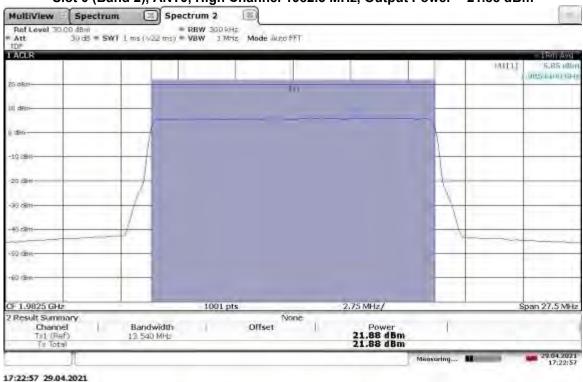


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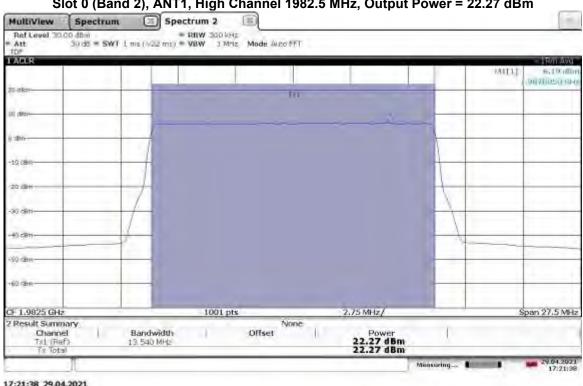
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TM3.1-64QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1982.5 MHz, Output Power = 21.88 dBm



TM3.1-64QAM_15 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1982.5 MHz, Output Power = 22.27 dBm

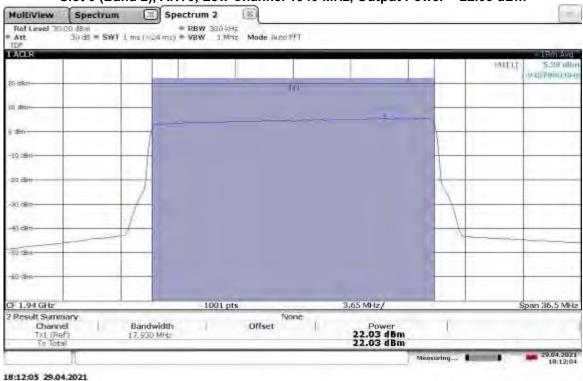


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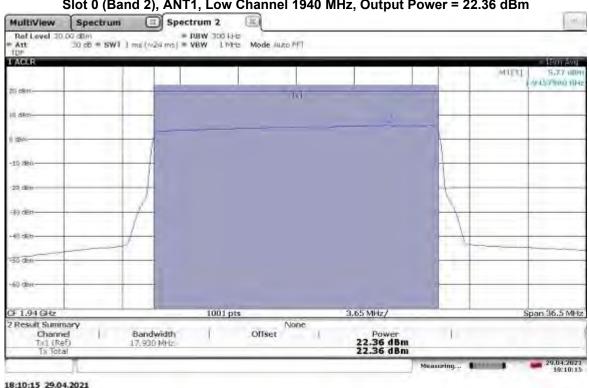
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TM3.1-64QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1940 MHz, Output Power = 22.03 dBm



TM3.1-64QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1940 MHz, Output Power = 22.36 dBm

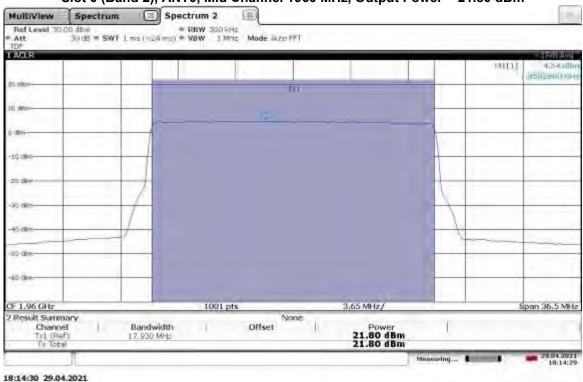


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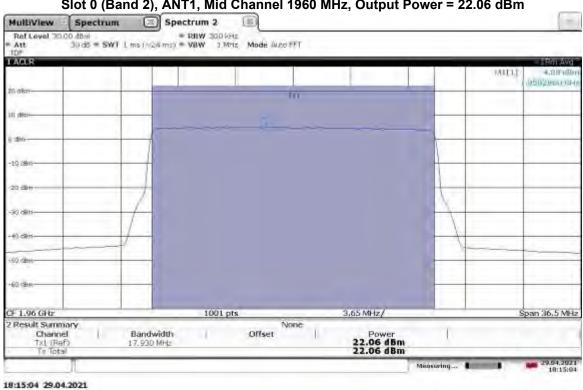
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TM3.1-64QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.80 dBm



TM3.1-64QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.06 dBm

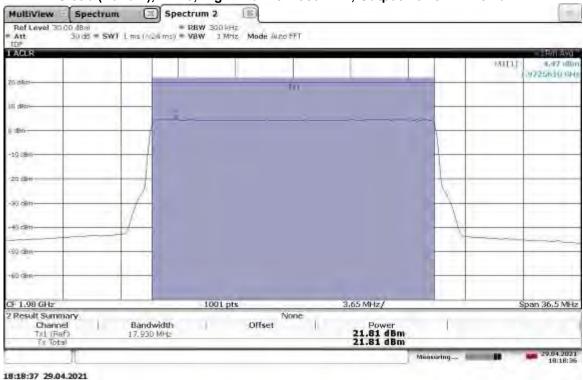


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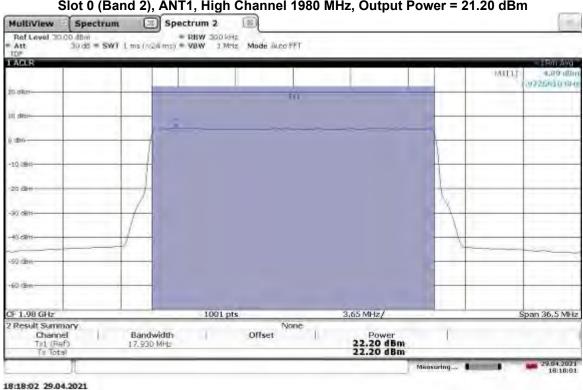
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TM3.1-64QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1980 MHz, Output Power = 21.81 dBm



TM3.1-64QAM_20 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1980 MHz, Output Power = 21.20 dBm

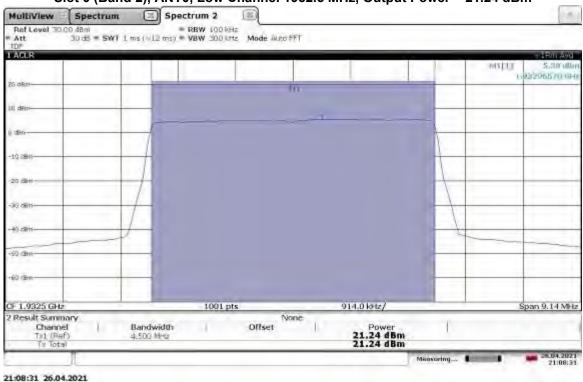


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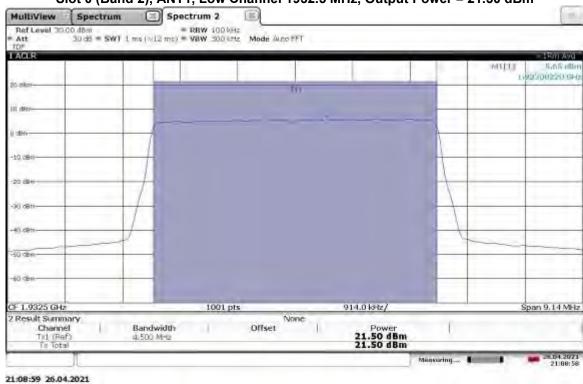
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TM3.1a-256QAM _5 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1932.5 MHz, Output Power = 21.24 dBm



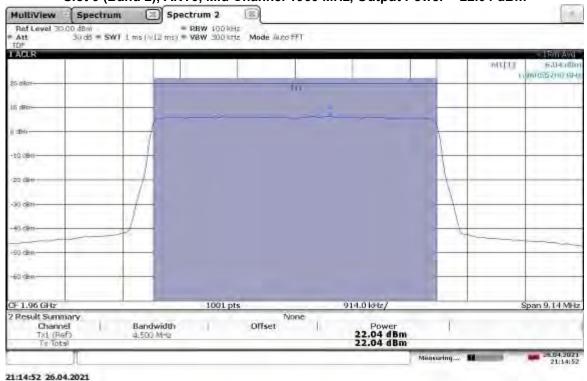
TM3.1a-256QAM _5 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1932.5 MHz, Output Power = 21.50 dBm



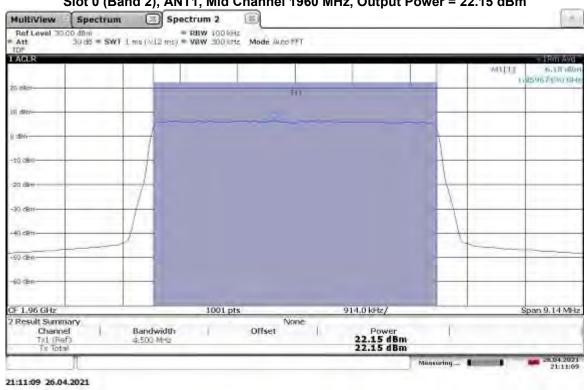
Non-Specific Radio Report Shell Rev. July 2020 Pag Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

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TM3.1a-256QAM _5 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 22.04 dBm



TM3.1a-256QAM _5 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.15 dBm

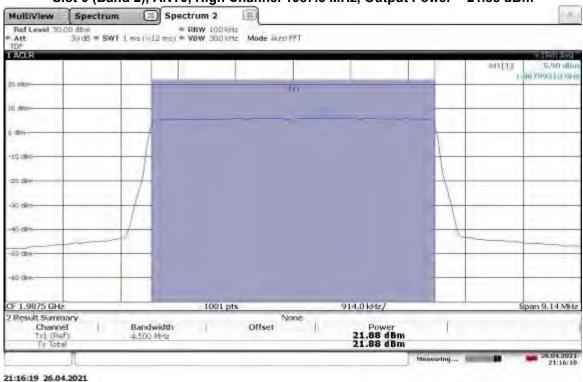


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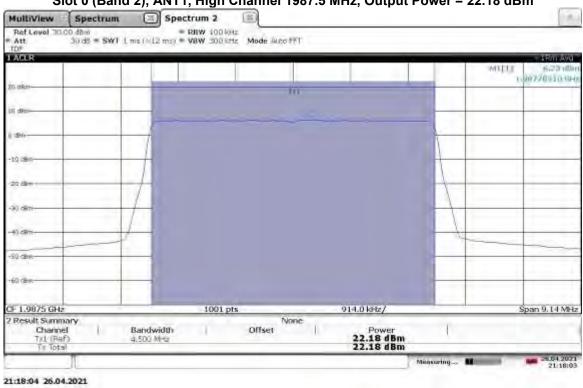
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TM3.1a-256QAM _5 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1987.5 MHz, Output Power = 21.88 dBm



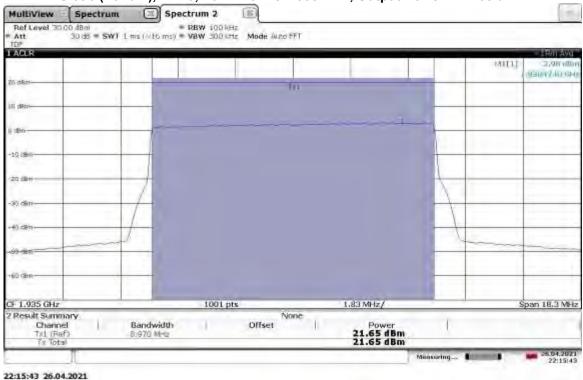
TM3.1a-256QAM _5 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1987.5 MHz, Output Power = 22.18 dBm



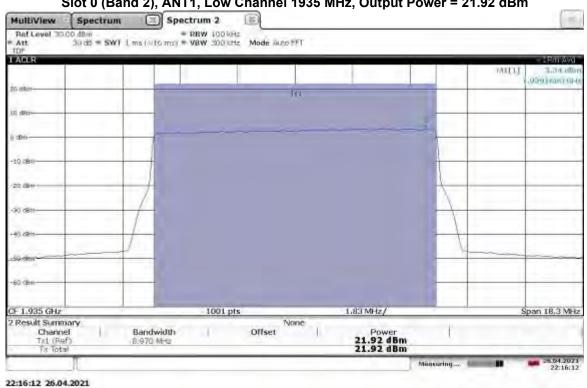
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TM3.1a-256QAM _10 MHz Bandwidth Slot 0 (Band 2), ANT0, Low Channel 1935 MHz, Output Power = 21.65 dBm



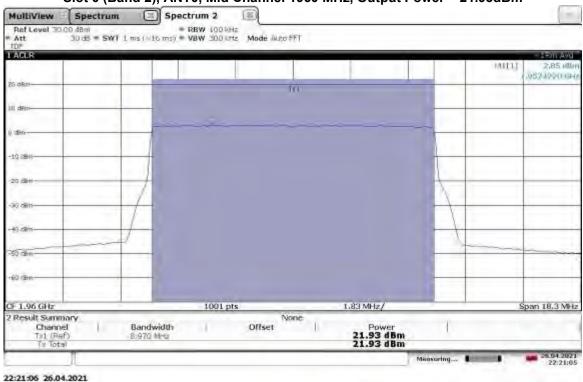
TM3.1a-256QAM _10 MHz Bandwidth Slot 0 (Band 2), ANT1, Low Channel 1935 MHz, Output Power = 21.92 dBm



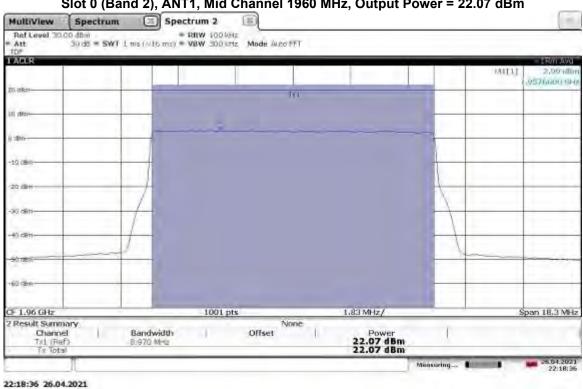
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TM3.1a-256QAM _10 MHz Bandwidth
Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.93dBm



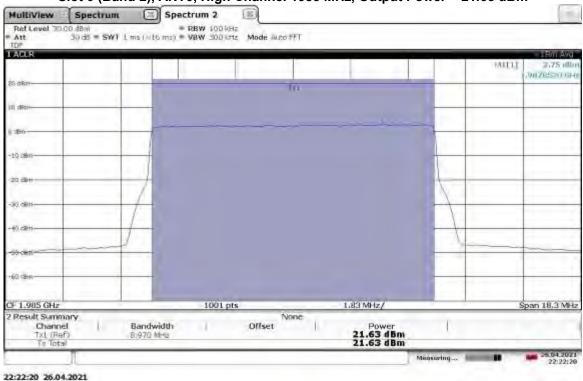
TM3.1a-256QAM _10 MHz Bandwidth
Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.07 dBm



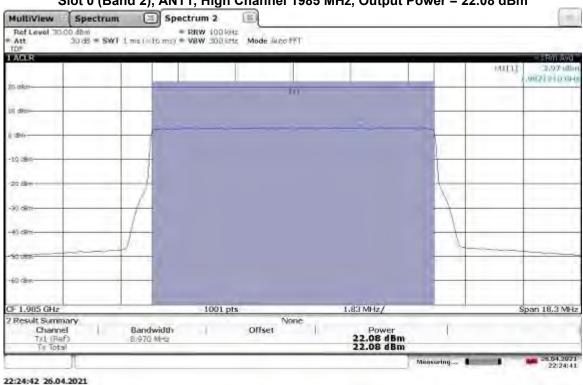
Non-Specific Radio Report Shell Rev. July 2020 Page Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

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TM3.1a-256QAM _10 MHz Bandwidth Slot 0 (Band 2), ANT0, High Channel 1985 MHz, Output Power = 21.65 dBm



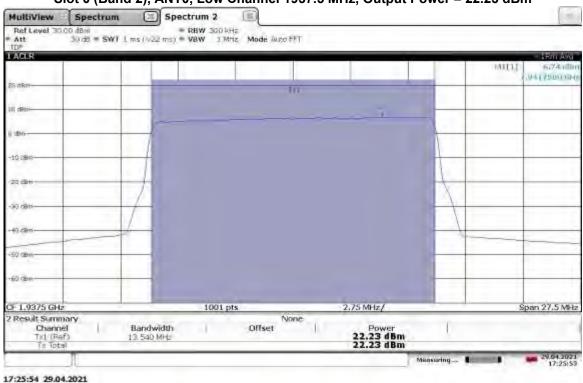
TM3.1a-256QAM _10 MHz Bandwidth Slot 0 (Band 2), ANT1, High Channel 1985 MHz, Output Power = 22.08 dBm



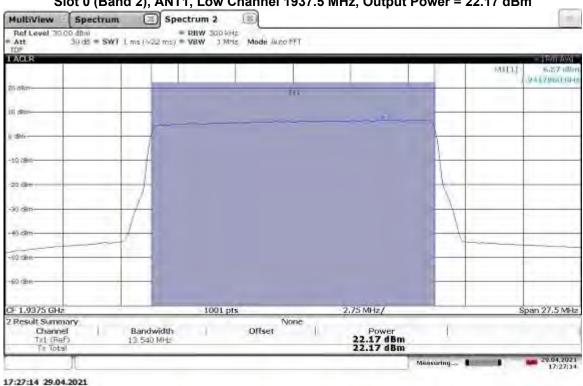
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TM3.1a-256QAM _15 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1937.5 MHz, Output Power = 22.23 dBm



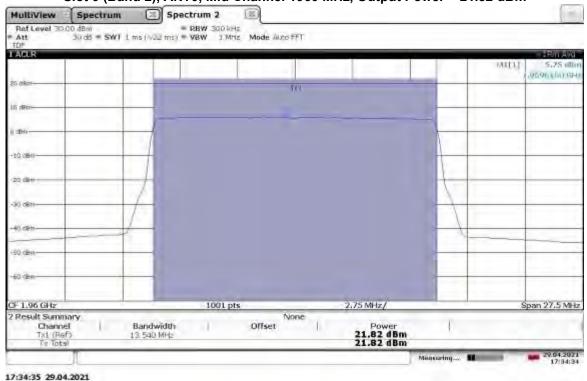
TM3.1a-256QAM _15 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1937.5 MHz, Output Power = 22.17 dBm



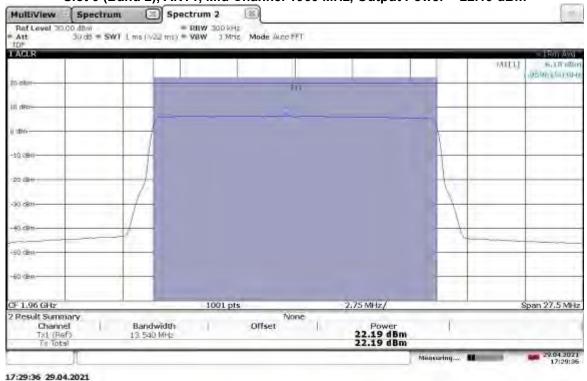
17.27.14 25.04.2021

Issued: 05/09/2021 Revised: 05/25/2021

TM3.1a-256QAM _15 MHz Bandwidth Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.82 dBm



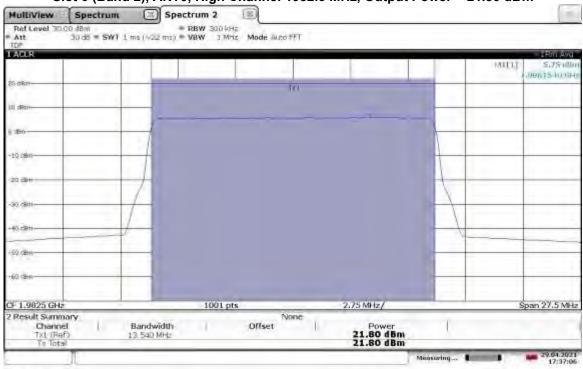
TM3.1a-256QAM _15 MHz Bandwidth Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.19 dBm



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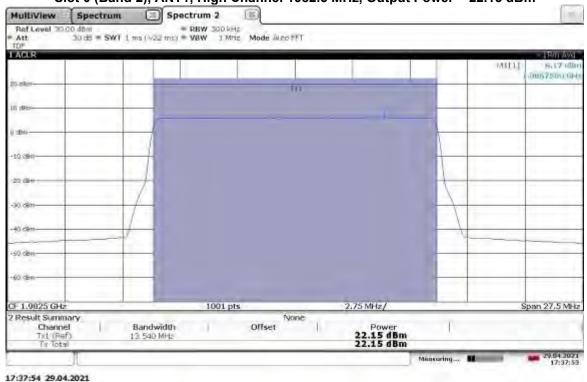
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TM3.1a-256QAM _15 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1982.5 MHz, Output Power = 21.80 dBm



17:37:07 29.04.2021

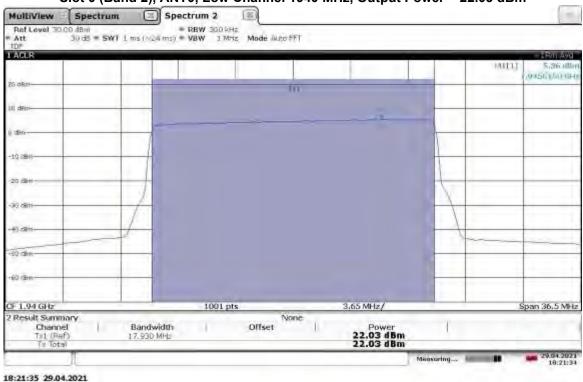
TM3.1a-256QAM _15 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1982.5 MHz, Output Power = 22.15 dBm



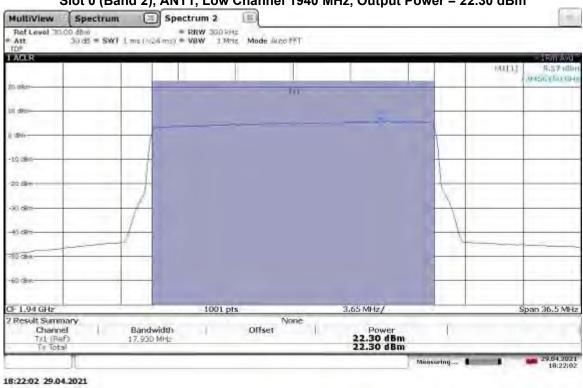
17:37:34 23:04:202

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TM3.1a-256QAM _20 MHz Bandwidth
Slot 0 (Band 2), ANT0, Low Channel 1940 MHz, Output Power = 22.03 dBm



TM3.1a-256QAM _20 MHz Bandwidth
Slot 0 (Band 2), ANT1, Low Channel 1940 MHz, Output Power = 22.30 dBm

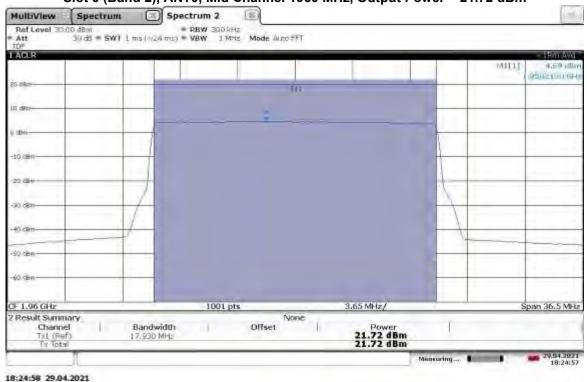


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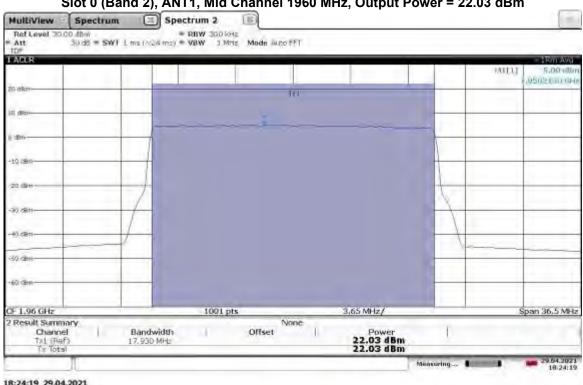
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TM3.1a-256QAM _20 MHz Bandwidth Slot 0 (Band 2), ANT0, Mid Channel 1960 MHz, Output Power = 21.72 dBm



TM3.1a-256QAM _20 MHz Bandwidth Slot 0 (Band 2), ANT1, Mid Channel 1960 MHz, Output Power = 22.03 dBm

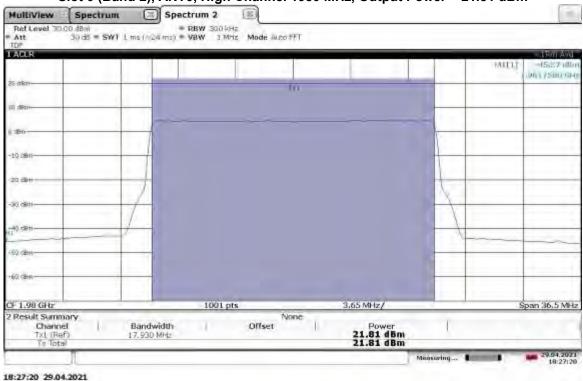


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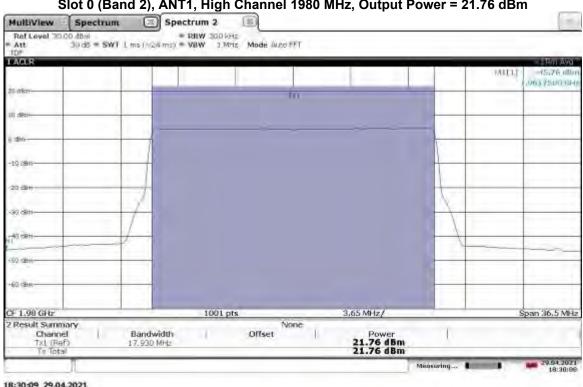
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TM3.1a-256QAM _20 MHz Bandwidth
Slot 0 (Band 2), ANT0, High Channel 1980 MHz, Output Power = 21.81 dBm



TM3.1a-256QAM _20 MHz Bandwidth
Slot 0 (Band 2), ANT1, High Channel 1980 MHz, Output Power = 21.76 dBm



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Limit for Maximum Permissible Exposure (MPE)

FCC Human RF Exposure Limits:

The FCC §1.1310 The criteria listed in table 1 was used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in §1.1307(b), except in the case of portable devices shall be evaluated according to the provisions of §2.1093 of this chapter.

Part §1.1310 Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
	(A) Limits for O	ccupational/Controlled Expo	sure	
0.3-3.0	614	1.63	*100	6
3.0-30	1842/f	4.89/f	*900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
	(B) Limits for Gener	al Population/Uncontrolled E	xposure	
0.3-1.34	614	1.63	*100	30
1.34-30	824/f	2.19/f	*180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

⁽¹⁾ Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when a person is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure. The phrase fully aware in the context of applying these exposure limits means that an exposed person has received written and/or verbal information fully explaining the potential for RF exposure resulting from his or her employment. With the exception of transient persons, this phrase also means that an exposed person has received appropriate training regarding work practices relating to controlling or mitigating his or her exposure. Such training is not required for transient persons, but they must receive written and/or verbal information and notification (for example, using signs) concerning their exposure potential and appropriate means available to mitigate their exposure. The phrase exercise control means that an exposed person is allowed to and knows how to reduce or avoid exposure by administrative or engineering controls and work practices, such as use of personal protective equipment or time averaging of exposure.

⁽²⁾ General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Test Procedure

RF exposure for licensed transmitter is handled at the time of licensing, however, an MPE calculation was performed in order to show the distance at which the device is compliant with the limits of §1.1310, assuming antenna gains of 0 dBi and 4 dBi. The highest measured conducted output power was used, adjusted by +3dB to account for two antenna MIMO operation.

FCC Limit For General Population/Uncontrolled Exposure at 1.9375 GHz = 1 mW/cm²

Power Density = $[EIRP] / [4\pi \times (D_{cm})^2]$

Where EIRP is in milliwatts and D is in centimeters. Setting the power density equal to the limit of 1 mW/cm² and solving for D_{cm} yields the following results.

Results:

EUT EIRP = Conducted power + Array Gain + Antenna gain in dBi

Power Density Limit = [EIRP] / $[4\pi \text{ x } (D_{cm})^2]$ 1 mW/cm² = [EIRP] / $[4\pi \text{ x } (D_{cm})^2]$ D_{cm} = ([EIRP] / $[4\pi]$)^{1/2}

For Gain = 0 dBi,

EIRP = 22.85 dBm + 10*LOG(2) + 0 dBi = 22.85 dBm + 3 dB + 0 dBi

EIRP = 25.85 dBm or 384.59 mW

Therefore, the minimum safe distance D_{cm} is $D_{cm} = ([384.59] / [4\pi])^{1/2}$

D_{cm} = 5.532 cm at 0 dBi gain two antenna MIMO

For Gain = 4 dBi,

EIRP = 22.85 dBm + 10*LOG(2) + 4 dBi = 22.85 dBm + 3 dB + 4dBi

EIRP = 29.85 dBm or 966.05 mW

Therefore, the minimum safe distance D_{cm} is $D_{cm} = ([966.05] / [4\pi])^{1/2}$

D_{cm} = 8.77 cm at 4 dBi gain two antenna MIMO

For Gain = X dBi,

EIRP = 22.85 dBm + 10*LOG(2) + X dBi = 22.85 dBm + 3 dB + XdBi

EIRP = 25.85+X dBm or $384.59 + 10^{(X/10)}$ mW

Therefore, the minimum safe distance D_{cm} is $D_{cm} = ([384.59 + 10^{(X/10)}] / [4\pi])^{1/2}$

 $D_{cm} = 0.282 * (384.59 + 10^{(X/10)})^{1/2}$ cm at X dBi gain two antenna MIMO

Test Date: 04/26/2021 Test Personnel: 04/29/2021 Supervising/Reviewing Engineer: (Where Applicable) N/A Product Standard: FCC Part 24 Limit Applied: See report section 6.3 Input Voltage: 48 VDC (POE) Pretest Verification w/ Ambient Temperature: 22, 23 °C Ambient Signals or BB Source: N/A Relative Humidity: 21, 15 % Atmospheric Pressure: 1004, 1013 mbars

Deviations, Additions, or Exclusions: None

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Occupied Bandwidth

7.1 Method

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1049 and 24.

TEST SITE: EMC Lab

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

7.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/22/2021	01/22/2022
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252676002	02/19/2021	02/19/2022
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021
DAV005	Weather Station Vantage Vue	Davis	6250	MS191218083	02/07/2021	02/07/2022

Software Utilized:

Name	Manufacturer	Version
None		

7.3 Results:

The sample tested was found to Comply.

§2.1049: The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission.

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Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM1.1-QPSK

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	1932.50	ANT0	4.497
		ANT1	4.496
Mid	1960.00	ANT0	4.496
		ANT1	4.497
High	1987.50	ANT0	4.497
		ANT1	4.497

Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM1.1-QPSK

	0.00 0 (2 a.m. 2), 2 a.m. a.m. 10 mm.=, m. 0 a.m. 1 mm. 1 a.m. 1			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	1935.00	ANT0	8.970	
		ANT1	8.970	
Mid	1960.00	ANT0	8.974	
		ANT1	8.960	
High	1985.00	ANT0	8.978	
		ANT1	8.979	

Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM1.1-QPSK

	Ciot o (Baria 2), Baria Wiatii. To ini 12, modalation: Tim 1:1 Qi Cit			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	1937.50	ANT0	13.537	
		ANT1	13.537	
Mid	1960.00	ANT0	13.529	
		ANT1	13.540	
High	1982.50	ANT0	13.563	
		ANT1	13.551	

Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM1.1-QPSK

	Siot o (Bana 2), Banawiatii. 20 Milz, Modulation. Twi 1.1-Qi Si				
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)		
Low	1940.00	ANT0	17.931		
		ANT1	17.935		
Mid	1960.00	ANT0	17.941		
		ANT1	17.939		
High	1980.00	ANT0	17.983		
		ANT1	17.987		

Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.2-16QAM

	Olot o (Baria 2), Bariawiatii. O Witz, Modalation. Timo.2-10&Aim			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	1932.50	ANT0	4.488	
		ANT1	4.488	
Mid	1960.00	ANT0	4.486	
		ANT1	4.490	
High	1987.50	ANT0	4.488	
		ANT1	4.484	

Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM3.2-16QAM

	Siot o (Bario 2), Bariowichi. To Mitz, Modulation. TMS.2-10QAM			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	1935.00	ANT0	8.957	
		ANT1	8.945	
Mid	1960.00	ANT0	8.953	
		ANT1	8.956	
High	1985.00	ANT0	8.960	
		ANT1	8.963	

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Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3,2-16QAM

	0.00 (
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	1937.50	ANT0	13.492	
		ANT1	13.474	
Mid	1960.00	ANT0	13.486	
		ANT1	13.443	
High	1982.50	ANT0	13.514	
		ANT1	13.499	

Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.2-16QAM

	0.00 0 (20.00 2), 20.0000 20 20 20			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	1940.00	ANT0	17.949	
		ANT1	17.950	
Mid	1960.00	ANT0	17.906	
		ANT1	17.912	
High	1980.00	ANT0	17.946	
		ANT1	17.958	

Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.1-64QAM

	Siot o (Bana 2), Banawiath. 5 Milz, Modulation. 1 Mis. 1-04QAM			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	1932.50	ANT0	4.530	
		ANT1	4.529	
Mid	1960.00	ANT0	4.532	
		ANT1	4.533	
High	1987.50	ANT0	4.532	
		ANT1	4.532	

Slot 0 (Band 2) Bandwidth: 10 MHz Modulation: TM3 1-640AM

	Siot o (Baria 2), Bariawiatii. 10 MHz, Modulatioii. 1 M3.1-84QAM			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)	
Low	1935.00	ANT0	8.984	
		ANT1	8.983	
Mid	1960.00	ANT0	8.982	
		ANT1	8.985	
High	1985.00	ANT0	8.984	
		ANT1	8.986	

Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3.1-64QAM

olot o (Bana 2), Banawiatii. 15 Mil 2, Modalation: 1 Mo. 1-0-44A			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	1937.50	ANT0	13.534
		ANT1	13.549
Mid	1960.00	ANT0	13.559
		ANT1	13.560
High	1982.50	ANT0	13.585
		ANT1	13.576

Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.1-64QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	1940.00	ANT0	17.900
		ANT1	17.913
Mid	1960.00	ANT0	17.924
		ANT1	17.930
High	1980.00	ANT0	17.955
_		ANT1	17.967

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Slot 0 (Band 2), Bandwidth: 5 MHz, Modulation: TM3.1a-256QAM_

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	1932.50	ANT0	4.516
		ANT1	4.516
Mid	1960.00	ANT0	4.515
		ANT1	4.515
High	1987.50	ANT0	4.515
		ANT1	4.514

Slot 0 (Band 2), Bandwidth: 10 MHz, Modulation: TM3.1a-256QAM_

0.000 (20.00 2); 20.000 10 mm.2; modulution 1 morru 2004; m,			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	1935.00	ANT0	8.969
		ANT1	8.970
Mid	1960.00	ANT0	8.961
		ANT1	8.961
High	1985.00	ANT0	8.973
		ANT1	8.968

Slot 0 (Band 2), Bandwidth: 15 MHz, Modulation: TM3.1a-256QAM

olot o (Bana 2), Banawatin To ini 12, inocalation. Timo: Ta 200@/ ti			
Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	1937.500	ANT0	13.529
		ANT1	13.542
Mid	1960.00	ANT0	13.536
		ANT1	13.515
High	1982.50	ANT0	13.564
		ANT1	13.550

Slot 0 (Band 2), Bandwidth: 20 MHz, Modulation: TM3.1a-256QAM

Channel	Frequency (MHz)	Antenna Port	Occupied BW (MHz)
Low	1940	ANT0	17.956
		ANT1	17.926
Mid	1960	ANT0	17.942
		ANT1	17.960
High	1980	ANT0	17.999
		ANT1	18.017

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7.4 Setup Photograph:

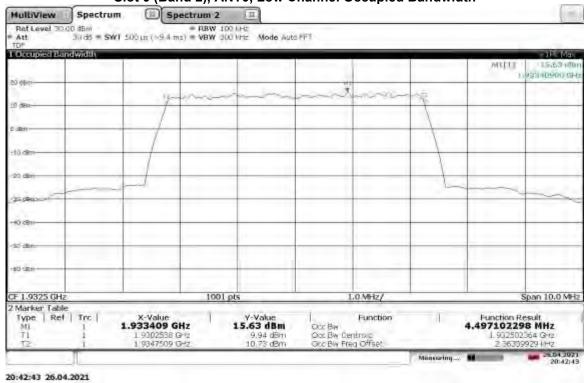
Confidential

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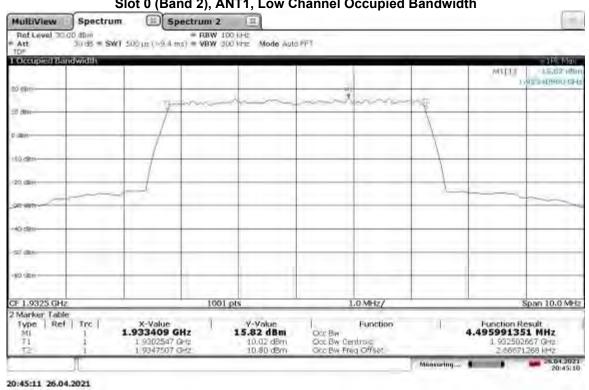
Revised: 05/25/2021

7.5 Plots/Data:

TM1.1-QPSK_5 MHz Bandwidth Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



TM1.1-QPSK_5 MHz Bandwidth Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth

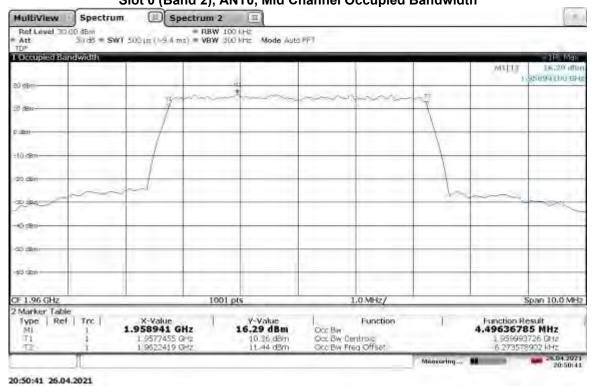


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Report Number: 104601893BOX-011 Issued: 05/09/2021 Revised: 05/25/2021

TM1.1-QPSK_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



TM1.1-QPSK_5 MHz Bandwidth

Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = RBW 100 lHt Att 50 db = SWT 500 µs (1-9 4 ms) = VBW 300 kHz Mode Auto FFT gregation gap Span 10.0 MHz Marker Table X-Value 1.958941 GHz V-Value 16.42 dBm Function Result 4,497154298 MHz Type | Ref | Trc | Occ Bw Occ Bw Centroic Occ Bw Freq Offset 10.54 dBm 11.56 dBm 1.959993318 GHz -6.682433112 kHz 20:48:53 26.04.2021

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Span 10.0 MHz

Function Result 4.531774969 MHz

1.98749514 GHz 4.860075114 kHz

TM1.1-QPSK_5 MHz Bandwidth

TM1.1-QPSK_5 MHz Bandwidth

1.0 MHz/

Occ Bw Occ Bw Centraic Occ Bw Freq Offset

Function

1001 pts

V-Value 16.81 dBm

9,72 dBm 10,72 dBm

X-Value 1.989528 GHz

9852293 GHz 1 989761 GHz

CF 1.9875 GHz

Marker Table Type | Ref | Trc |

21:04:56 26.04.2021

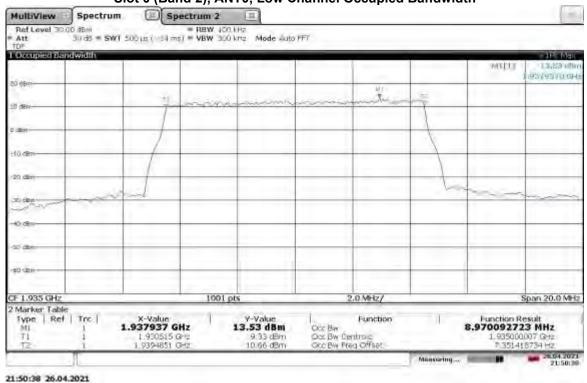
Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = RBW 100 iHz Att 30 dS = SWT 500 µs (+9 4 ms) = VBW 300 kHz Mode Auto FFT HAD BY THE BOOK F 1.9875 GHz Span 10.0 MHz Marker X-Value 1.986441 GHz V-Value 16.34 dBm Function Result 497034756 MHz Type | Ref | Trc | Oct Bw Oct Bw Centrals Oct Bw Freg Offset 10.39 dBm 10.87 dBm 1.987495339 GHz 4.66095833 NHz 20:54:37 26.04.2021

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TM1.1-QPSK_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



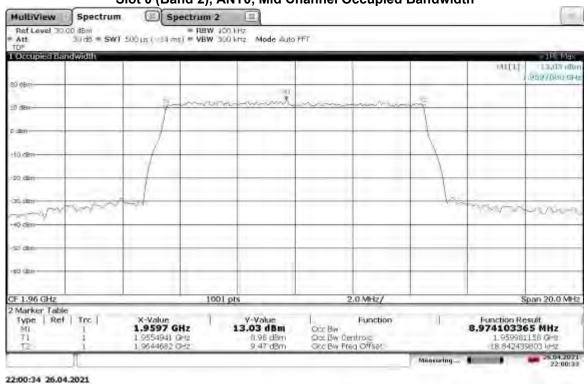
TM1.1-QPSK_10 MHz Bandwidth

Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = PBW 100 kHz * Att 30 db = SWT 500 µs (\rightarrow 54 ms) = VBW 300 kHz Mode Auto PFT 95 (95 / 0 GH Span 20.0 MHz Marker Table X-Value 1.937937 GHz V-Value 13.52 dBm Function Result 8,96996988 MHz Type | Ref | Trc | Occ Bw Occ Bw Centroic Occ Bw Freq Offset 1,934999122 GHz 878,174661398 Hz 8.72 dBm 10.63 dBm 21:55:28 26.04.2021

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TM1.1-QPSK_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



TM1.1-QPSK_10 MHz Bandwidth

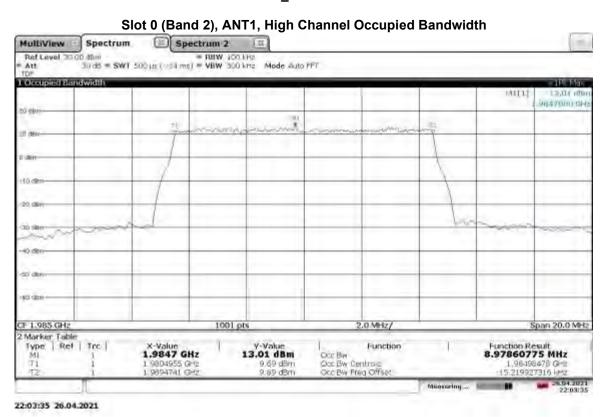
Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = PBW 100.0Hz # Att 30 dB = SWT 500 µs (\rightarrow 54 ms) = VBW 300 kmz Mode Auto FFT Spin-in-ru GHo Marker Type | Ref | Trc | X-Value 1.956464 GHz V-Value 13.08 dBm Function Result 8,975916966 MHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 1.959980124 G-1 19.875542815 kHz 9.39 d5m 9.81 d8m 21:56:52 26.04.2021

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TM1.1-QPSK_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm Att 30 dB = SW1 500 us (= RBW 400 KHz (54 ms) = VBW 300 kmz Mode Auto FFT 1 Occupied Bandwidth 98470b0 GH 1001 pts CF 1.985 GHz 2.0 MHz/ Span 20.0 MHz 2 Marker Table Type | Ref | Trc | X-Value 1.9847 GHz V-Value 12.62 dBm Function Function Result 8.977592171 MHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 9.06 dBm 9.86 dBm 1.984990221 GHz 9.778631621 MHz

TM1.1-QPSK_10 MHz Bandwidth



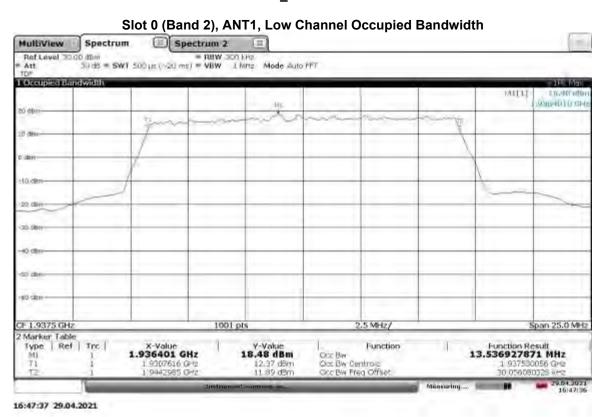
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22:01:38 26.04.2021

TM1.1-QPSK_15 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum = RBW 300 kHz = VBW 1 MHz Mode Auto FFT Ref Level 30.00 fBm = FREW Att 30 dB = SWT 500 µs (>20 ms) = VBW 1 Occupied B 930 F250 GH 1001 pts 2.5 MHz/ CF 1.9375 GHz Span 25.0 MHz Marker Table Type | Ref | Trc | X-Value 1.936426 GHz Y-Value 19.04 dBm Function Function Result 13.536987902 MHz Oct Bw Oct Bw Centralc Oct Bw Freq Offset 12.86 dBm 12.25 dBm 1 937525815 Gre 25.815122716 8-2 16:42:15 29.04.2021

TM1.1-QPSK_15 MHz Bandwidth



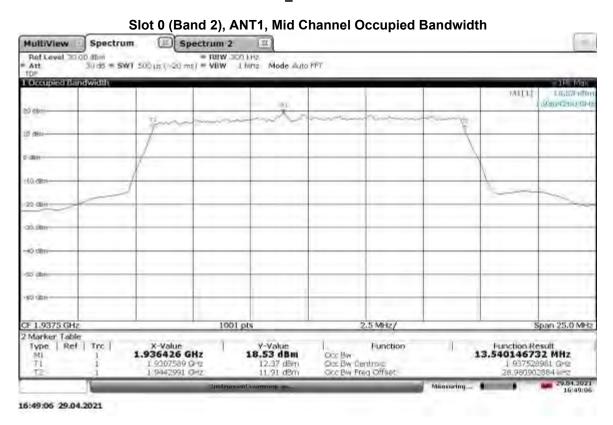
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TM1.1-QPSK_15 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth MultiView Spectrum Spectrum 2 30.00 dBm = REW 300 kHz 30 dB = SWT 500 µs (>20 ms) = VBW 1 Mmz Mode Auto FFT # Att 1 Occupied Bandwid LOATE offs assento ca-Span 25.0 MHz F 1.96 GHz 1001 pts 2.5 MHz/ Marker Tabi Type | Ref | Trc | Function Function Result 13.529141012 MHz Y-Value 18.01 dBm 1.958901 GHz Oct Bw Oct Bw Centroic Oct Bw Freq Offset 11.47 dBm 11.36 dBm

TM1.1-QPSK_15 MHz Bandwidth

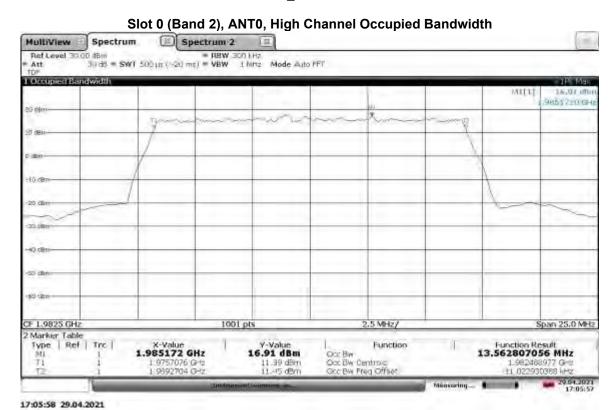


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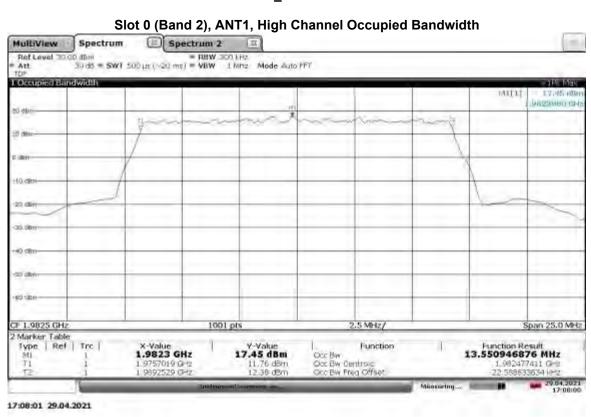
17:01:47 29.04.2021

Issued: 05/09/2021 Revised: 05/25/2021

TM1.1-QPSK_15 MHz Bandwidth



TM1.1-QPSK_15 MHz Bandwidth

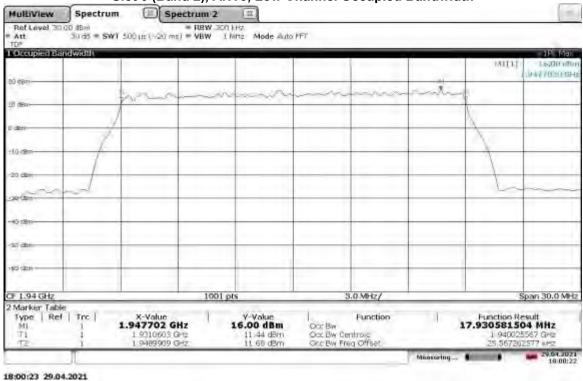


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TM1.1-QPSK_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



TM1.1-QPSK_20 MHz Bandwidth

Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 fBm = PBW 300 kHz * Att 30 d8 = SWT 500 ks (1-20 ms) = VBW 1 Mrs Mode Auto FFT 9477000 GH

3.0 MHz/

Oct Bw Oct Bw Centrals Oct Bw Freg Offset

18:02:45 29.04.2021

Marker Table

Type | Ref | Trc |

X-Value 1.947702 GHz

Function Result 17.934528022 MHz

1.940025858 25.858063682

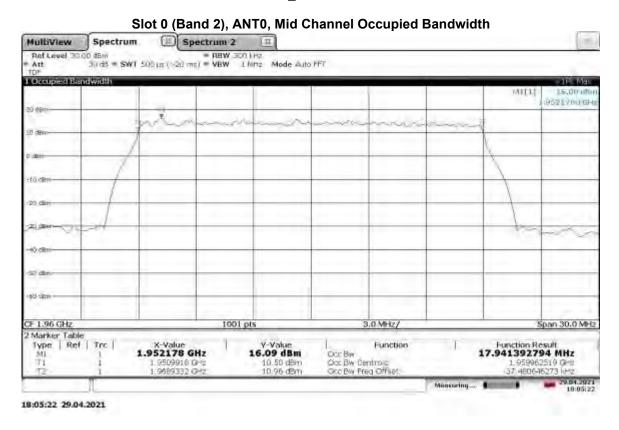
Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

V-Value 16.26 dBm

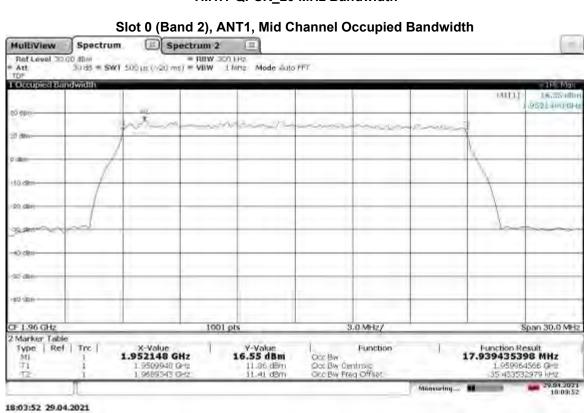
11.61 dBm

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TM1.1-QPSK_20 MHz Bandwidth



TM1.1-QPSK_20 MHz Bandwidth



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Span 30.0 MHz

Function Result 17.982658619 MHz

1.979981056 G-1 18.944291242 kHz

TM1.1-QPSK_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 fbm Att 30.05 = SWY 500 µs (1-20 ms) = VBW 1 Mnz Mode Auto FFT 1 Occupied Bandwidth 973525U GH

18:06:31 29.04.2021

1.973526 GHz

1.9709897 GHz 1.9889724 GHz

CF 1.98 GHz

2 Marker Table Type | Ref | Trc |

TM1.1-QPSK_20 MHz Bandwidth

3.0 MHz/

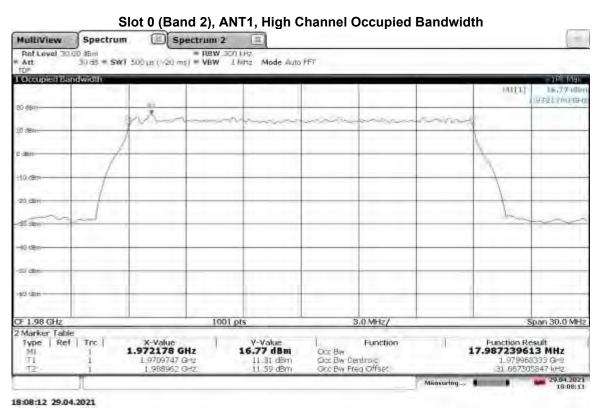
Occ Bw Occ Bw Centraic Occ Bw Freq Offset

Function

1001 pts

V-Value 15.37 dBm

10.76 dBm 11.54 dBm

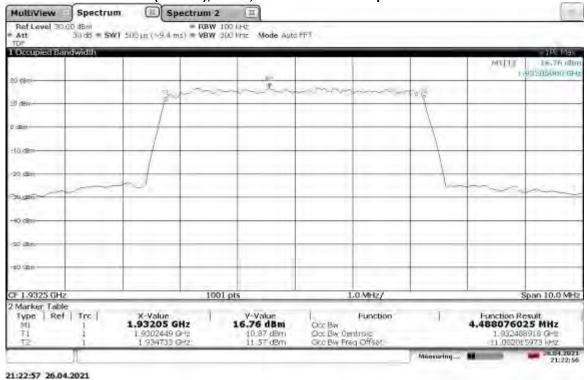


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TM3.2-16QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



TM3.2-16QAM_5 MHz Bandwidth

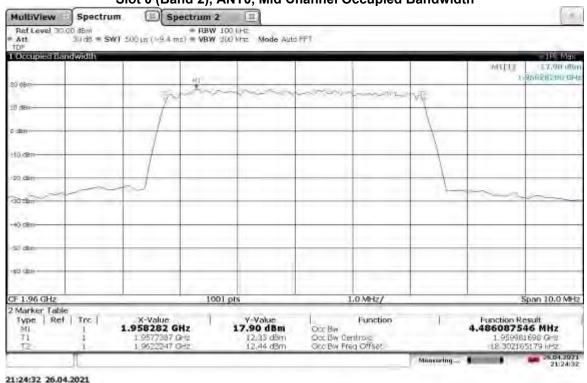
Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = RBW 100 iHz Att 30 dS = SWT 500 µs (+9 4 ms) = VBW 300 kHz Mode Auto FFT 99205000 GH Span 10.0 MHz Marker Table Function Result 4.488365134 MHz Type | Ref | Trc | 17.14 dBm 1.93205 GHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 11.24 d8m 11.95 d8m 1.932#9917 GHz -10.630384842 kHz 1.930245 GHz 9347334 GHz 21:21:17 26.04.2021

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TM3.2-16QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



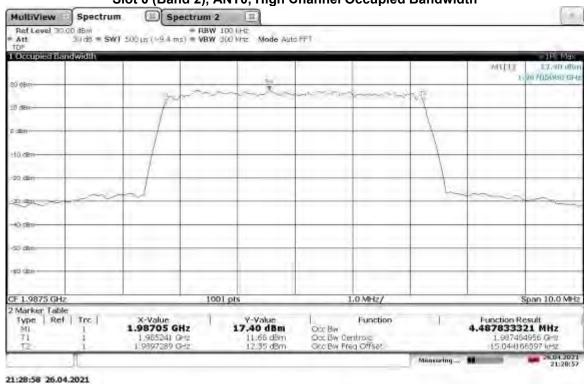
TM3.2-16QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum 956StiZbu GH Span 10.0 MHz Marker Table Type | Ref | Trc | X-Value 1.958302 GHz Function Result 4.490350063 MHz Y-Value 18.11 dBm Occ Bw Occ Bw Centraic Occ Bw Freq Offset 12.45 dBm 12.56 dBm 1.959979457 G 1 20 543378514 kHz 21:26:01 26.04.2021

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TM3.2-16QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



TM3.2-16QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Mode Auto FFT 96 /05000 GH ∓ 1.9875 GHz Span 10.0 MHz Marker Function Result 4,484037787 MHz Type | Ref | Trc | Y-Value 18.10 dBm 1.98705 GHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 12.56 dBm 12.87 dBm 1.987464607 GHz 15,39335825 HHz 1.9852426 GHz 1.9897266 GHz 21:27:29 26.04.2021

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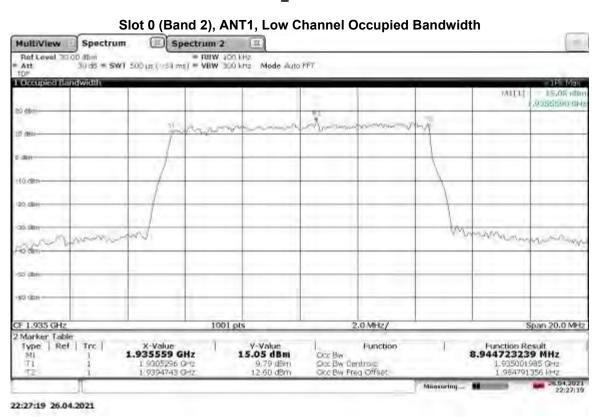
Report Number: 104601893BOX-011 Issued: 05/09/2021

Revised: 05/25/2021

TM3.2-16QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm Att 30 dS = SW1 500 µs (= RBW 100 KHz (54 ms) = VBW 300 kmz Mode Auto PFT 1 Occupied Bandwidth 9355 (90 64) MI TOWN 1001 pts CF 1.935 GHz 2.0 MHz/ Span 20.0 MHz 2 Marker Table Type | Ref | Trc | X-Value 1.935579 GHz V-Value 15.07 dBm Function Function Result 8.957297839 MHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 11.00 d5m 12.60 d8m 1.935000168 GHz 168.315882683 Hz 1 9305215 GHz 1 9394788 GHz

TM3.2-16QAM_10 MHz Bandwidth

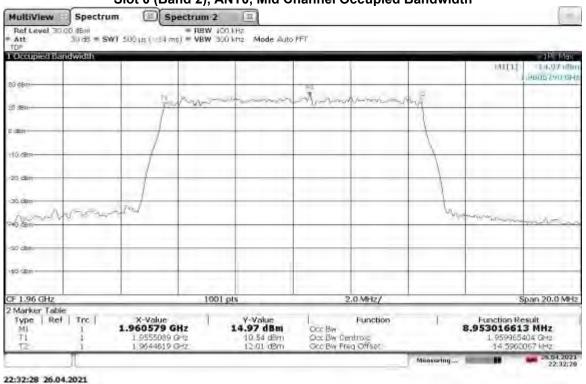


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22:28:18 26.04.2021

TM3.2-16QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



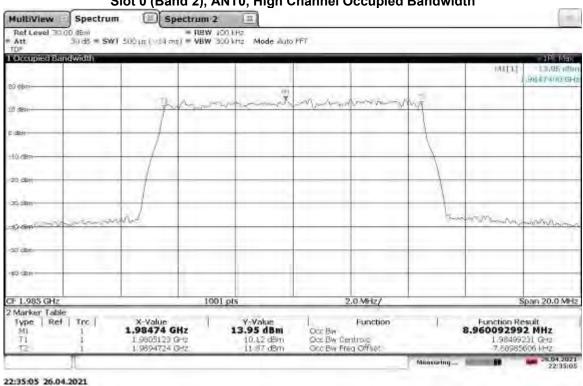
TM3.2-16QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = FBW 100 kHz # Att 30 db = SWT 500 µs (\rightarrows 4 ms) = VBW 300 kHz Mode Auto FFT 94D De3.20ae. W Span 20.0 MHz Marker Type | Ref | Trc | X-Value 1.960559 GHz V-Value 15.05 dBm Function Result 8.956231447 MHz Occ Bw Occ Bw Centraic Occ Bw Freq Offset 10.91 dBm 12.20 dBm 22:31:28 26.04.2021

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TM3.2-16QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



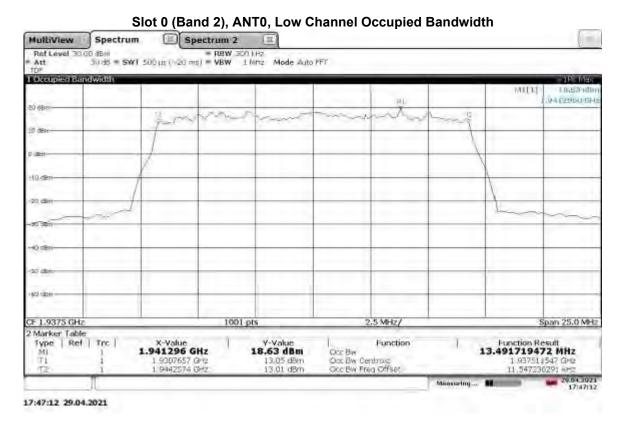
TM3.2-16QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = PBW 100 kHz * Att 30 db = SWT 500 µs (\rightarrows 4 ms) = VBW 300 kHz Mode Auto FFT 9847100 (34) CF 1.985 GHz Span 20.0 MHz Marker Table X-Value 1.98474 GHz V-Value 14.51 dBm Function Result 8.962405109 MHz Type | Ref | Trc | Occ Bw Occ Bw Centraic Occ Bw Freq Offset 1.9894724 GHz 10,82 d8m 12,09 d8m 1.984991193 GHz 8.806678333 MHz 22:35:42 26.04.2021

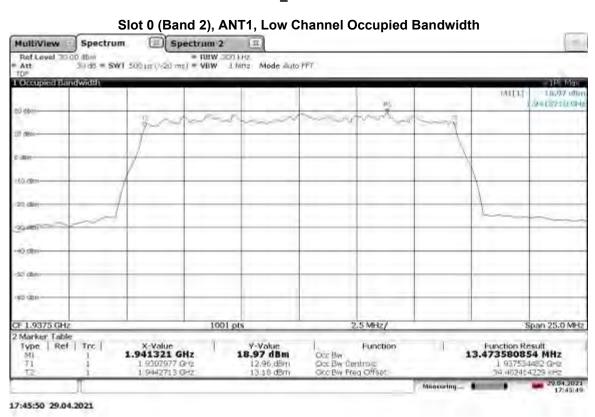
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TM3.2-16QAM_15 MHz Bandwidth



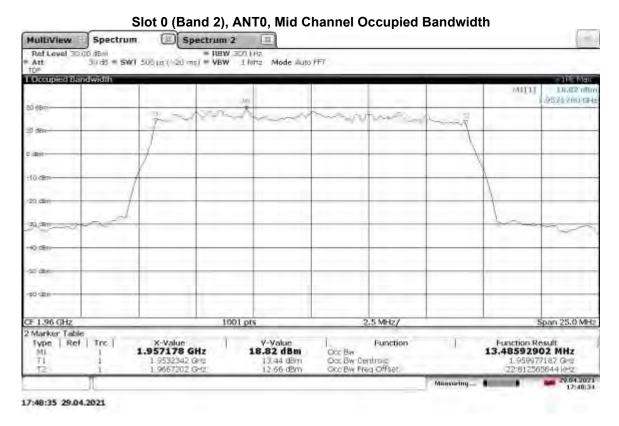
TM3.2-16QAM_15 MHz Bandwidth



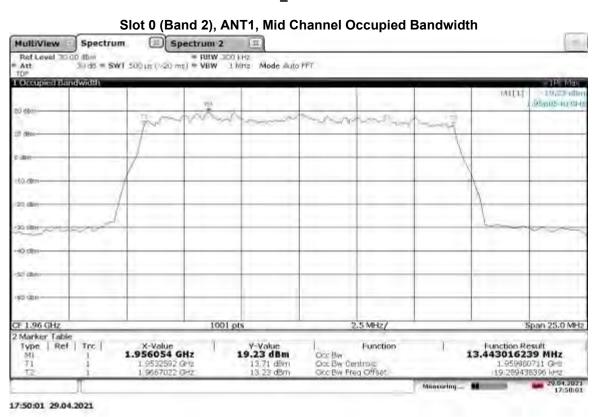
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TM3.2-16QAM_15 MHz Bandwidth



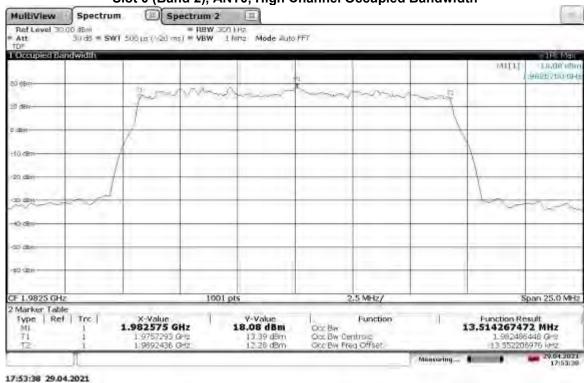
TM3.2-16QAM_15 MHz Bandwidth



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TM3.2-16QAM_15 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



TM3.2-16QAM_15 MHz Bandwidth

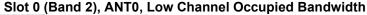
Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum Spectrum 2 MultiView 0 dBm = RBW 300 kHz 30 dB = SWT 500 µs (1/20 ms) = VBW 1 Mriz Mode Auto FFT Ref Level 30.00 dBm - Att 9 / 9 p. / Bu GH F 1.9825 GHz 1001 pts 2.5 MHz/ Span 25.0 MHz 2 Marker Table V-Value 18.85 dBm Type | Ref | Trc | Function Result 13.49869796 MHz X-Value 1.979678 GHz Function T Occ Bw Occ Bw Centroic Occ Bw Freq Offset 1.9757305 GH 1.9892292 GH 13.83 dBm 13.16 dBm 1.982479801 GHz 20 198579128 kHz 17:51:52 29.04.2021

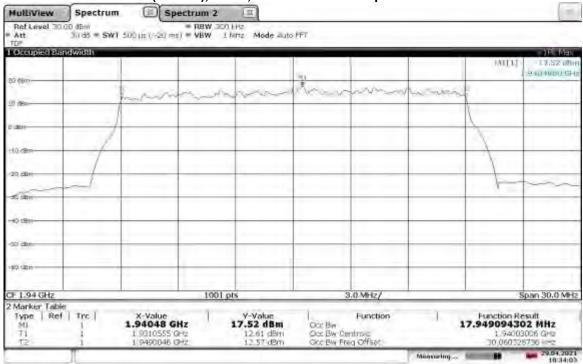
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Revised: 05/25/2021

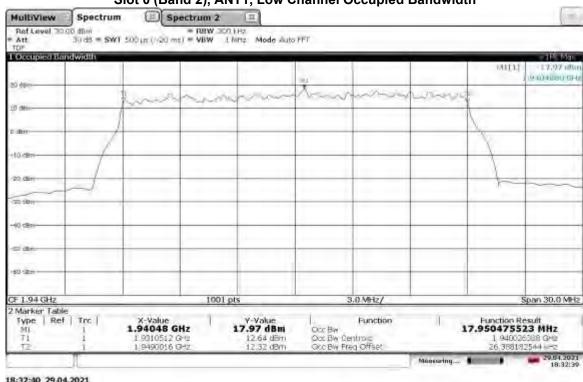
TM3.2-16QAM_20 MHz Bandwidth





18:34:04 29.04.2021

TM3.2-16QAM_20 MHz Bandwidth Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth



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Function Result 17.906436196 MHz

1.959961162 GH2 38.838427021 kHz

TM3.2-16QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 fbm = REW 300 FF7
Att 30.05 = SWT 500 µs (1/20 ms) = VBW 1 Mnz Mode Auto FF7 1 Occupied Ba 953/1970 (34) 1001 pts 3.0 MHz/ CF 1.96 GHz

18:35:38 29.04.2021

1.953497 GHz

1.9510079 GHz 1.9689144 GHz

2 Marker Table Type | Ref | Trc |

TM3.2-16QAM_20 MHz Bandwidth

Function

Oct Bw Oct Bw Centralc Oct Bw Freq Offset

V-Value 16.31 dBm

13.09 dBm 11.56 dBm

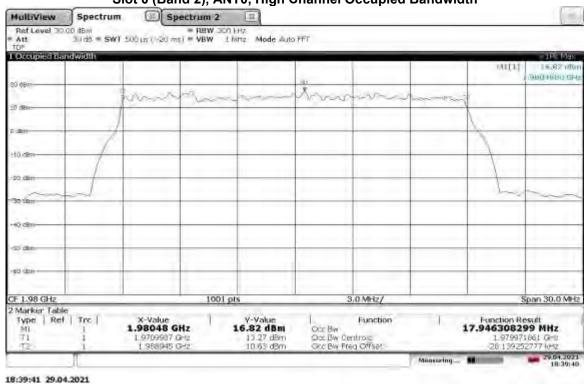
Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = PBW 300 kHz * Att 30 db = SWT 500 µs (A20 ms) = VBW 1 Mrs Mode Auto FFT 95 45750 GH Marker Type | Ref | Trc | X-Value 1.954575 GHz Function Result 17.911517028 MHz V-Value 17.52 dBm Occ Bw Occ Bw Centraic Occ Bw Freq Offset 13.34 d8m 11.61 d8m 1.959963727 GHz 36.273080258 kHz 18:37:01 29.04.2021

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TM3.2-16QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



TM3.2-16QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 fBm = PBW 300 kHz * Att 50 d8 = SWT 500 ks (1-20 ms) = VBW 1 Mrs Mode Auto FFT 980 (880 GH 3.0 MHz/ Marker Function Result 17,957913368 MHz Type | Ref | Trc | 17.67 dBm 1.98048 GHz Oct Bw Oct Bw Centrals Oct Bw Freg Offset 13,67 dBm 12,15 dBm 1.979978318 G 12 21.682376119 kHz 18:38:17 29.04.2021

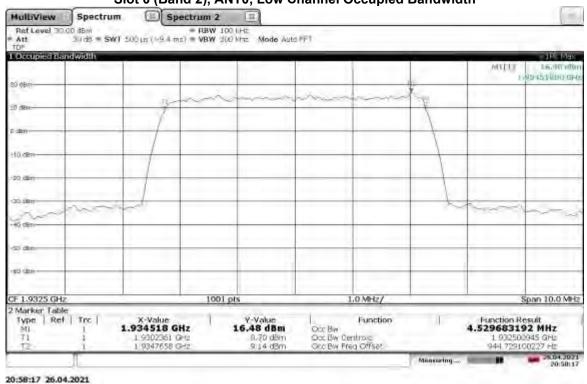
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TM3.1-64QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



TM3.1-64QAM_5 MHz Bandwidth

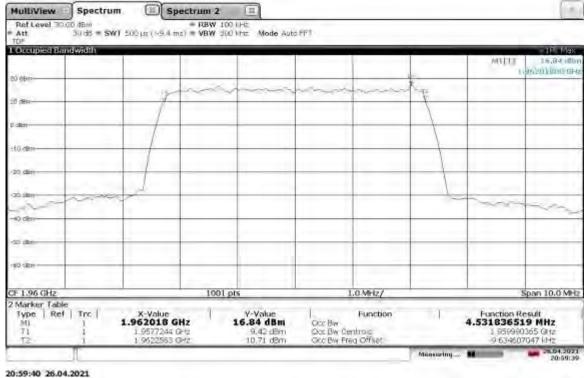
Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Mode Auto FFT 90 chi kuru ciro Span 10.0 MHz Marker Table Type | Ref | Trc | X-Value 1.934518 GHz V-Value 16.91 dBm Function Result 4,529182512 MHz Occ Bw Occ Bw Centraic Occ Bw Freq Offset 1.932501471 GHz 1.471176513 kHz 9.07 dBm 9.56 dBm 1 9302369 G-1 9347661 G-20;56:42 26.04.2021

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TM3.1-64QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



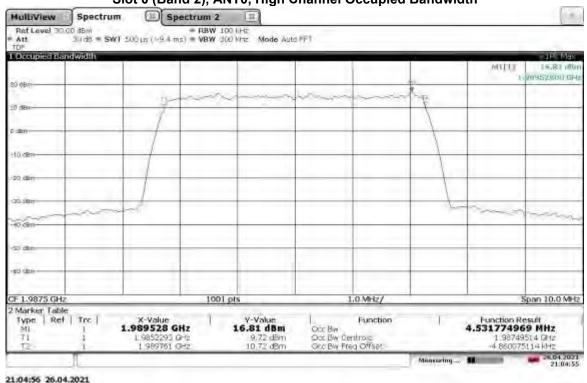
TM3.1-64QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = PBW 100 lHt Att 50 db = SWT 500 µs (1-9 4 ms) = VBW 300 kHz Mode Auto FFT 96202000 GH Span 10.0 MHz Marker Table V-Value 16.84 dBm Function Result 532794313 MHz Type | Ref | Trc | 1.962028 GHz Occ Bw Occ Bw Centraic Occ Bw Freq Offset 9.52 dBm 10.73 dBm 1.959989636 GHz 10.364482105 kHz 21:01:25 26.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 95 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

TM3.1-64QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



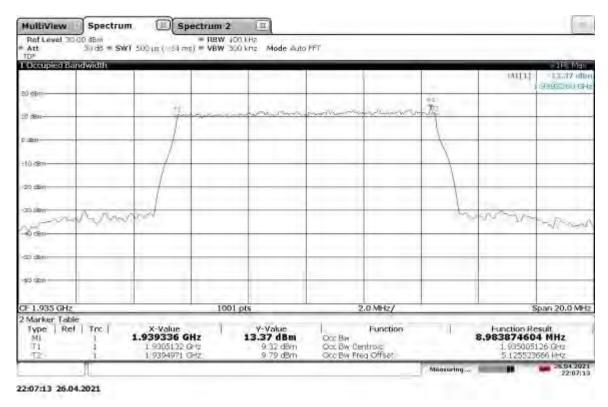
TM3.1-64QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 fBm = RBW 100 iHz * Att 30 d8 = SWT 500 µs (49 fl.ms) = VBW 300 kHz Mode Auto FFT 98953800 GH F 1.9875 GHz Span 10.0 MHz Marker Table X-Value 1.989518 GHz Function Result 4,531710921 MHz Type | Ref | Trc | Y-Value 17.18 dBm Occ Bw Occ Bw Centroic Occ Bw Freq Offset 1.987492391 GHz -7.60898634 kHz 9.47 dBm 11.04 dBm 21:03:00 26.04.2021

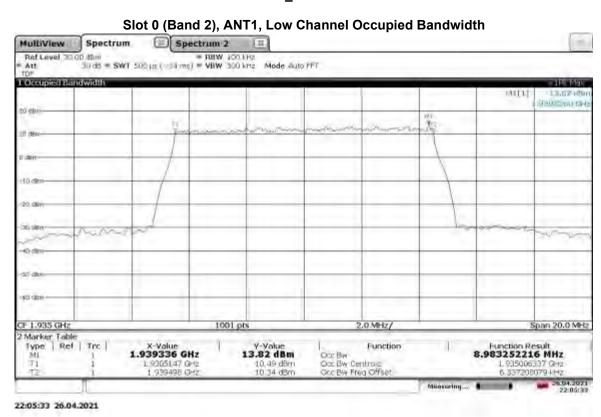
Non-Specific Radio Report Shell Rev. July 2020 Page 96 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

TM3.1-64QAM_10 MHz Bandwidth Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



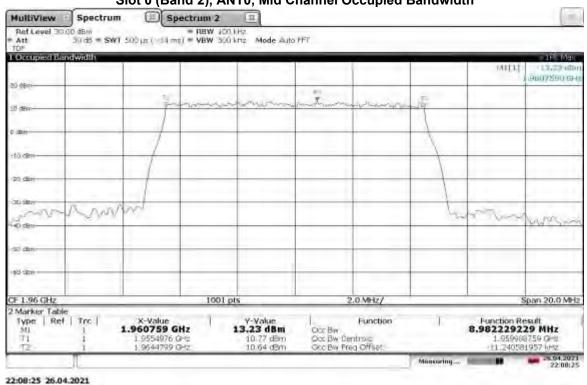
TM3.1-64QAM_10 MHz Bandwidth



Non-Specific Radio Report Shell Rev. July 2020 Page 97 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

TM3.1-64QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



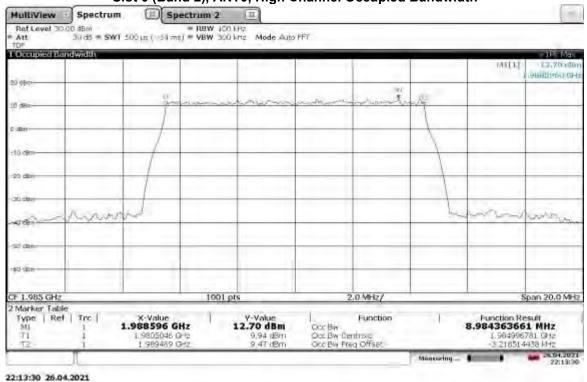
TM3.1-64QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = PLBW 100.0Hz * Att 30.dB = SWT 500 µs (\n0.4 ms) = VBW 300 km2 Mode Auto FFT 95/9030 03-0 Marker Table Type | Ref | Trc | X-Value 1.957982 GHz Function Result 8.984870674 MHz Y-Value 13.22 dBm Occ Bw Occ Bw Centroic Occ Bw Freq Offset 9554962 Gr 1,964481 Gr 10.93 dBm 10.70 dBm 1.959988602 GHz 11.398131738 kHz 22:10:35 26.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 98 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

TM3.1-64QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



TM3.1-64QAM_10 MHz Bandwidth

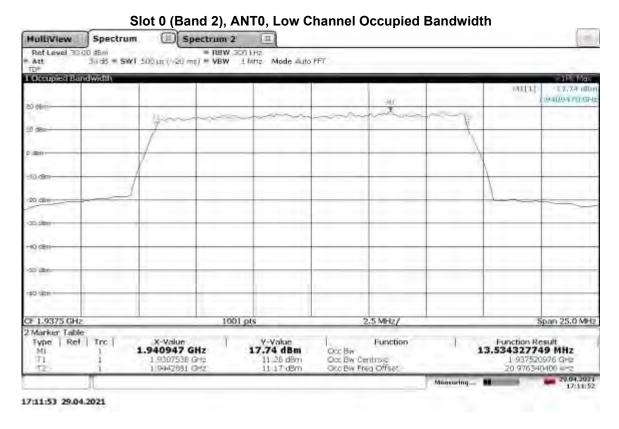
Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = PBW 400 kHz # Att 30 dB = SWT 500 µs (\rightarrow 54 ms) = VBW 300 kHz Mode Auto FFT 9672 I 7 U GH CF 1.985 GHz Span 20.0 MHz Marker Table X-Value 1.987517 GHz Function Result 8.986188618 MHz Type | Ref | Trc | Y-Value 13.29 dBm Oct Bw Oct Bw Centrals Oct Bw Freg Offset 10.84 dBm 11.25 dBm 1.984992153 GHz 7.846875823 kHz 22:11:50 26.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 99 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

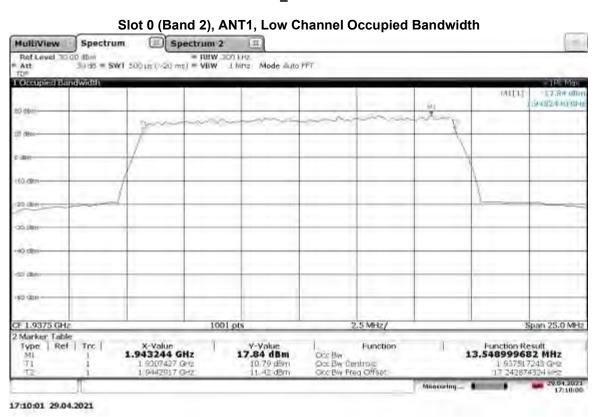
Report Number: 104601893BOX-011 Issued: 05/09/2021

Revised: 05/25/2021

TM3.1-64QAM_15 MHz Bandwidth



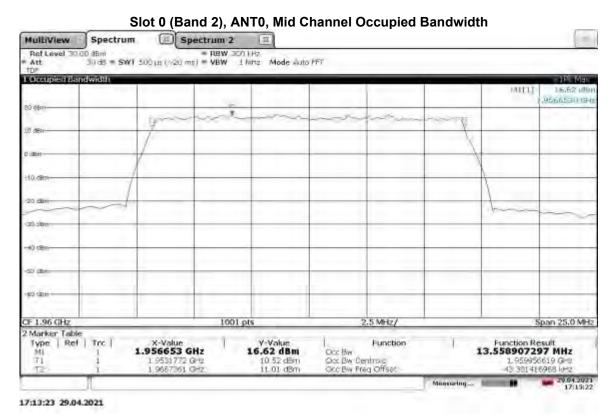
TM3.1-64QAM_15 MHz Bandwidth



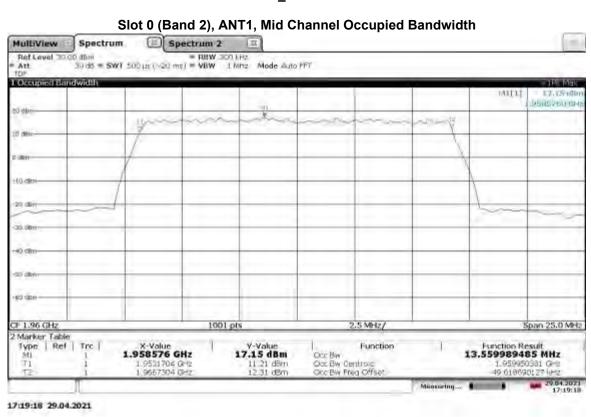
Non-Specific Radio Report Shell Rev. July 2020 Page 100 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

TM3.1-64QAM_15 MHz Bandwidth



TM3.1-64QAM_15 MHz Bandwidth



Non-Specific Radio Report Shell Rev. July 2020 Page 101 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

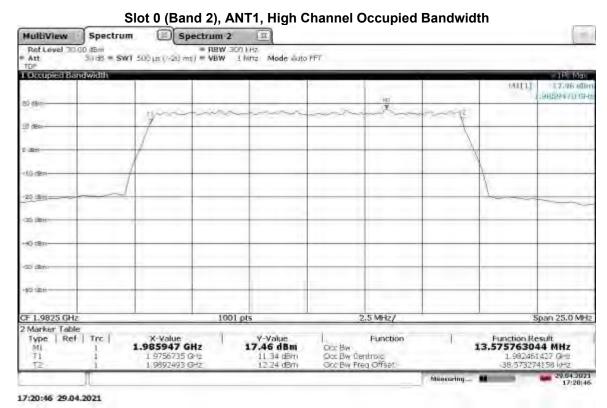
TM3.1-64QAM_15 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



17:23:27 29.04.2021

TM3.1-64QAM_15 MHz Bandwidth



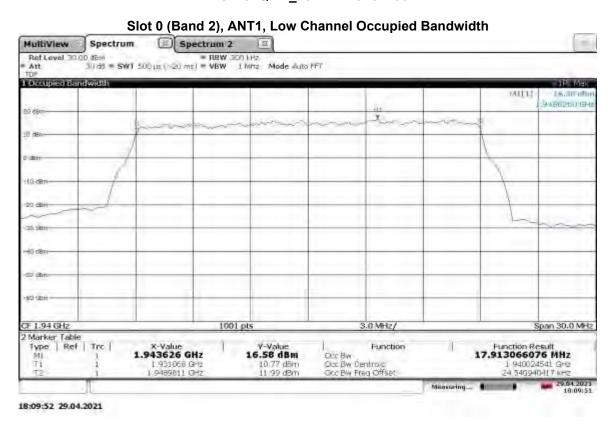
Non-Specific Radio Report Shell Rev. July 2020 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

TM3.1-64QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30:00 fbm = REW 300 kHz Att 30:05 = SWT 500 µs (>20 ms) = VBW 1 Minz Mode Auto FFT 1 Occupied Bandwidth 9 (6250 0) 1001 pts 3.0 MHz/ CF 1.94 GHz Span 30.0 MHz 2 Marker Table Type | Ref | Trc | Y-Value 16.22 dBm Function Function Result 17.900323937 MHz 1.944525 GHz Oct Bw Oct Bw Centralc Oct Bw Freq Offset 10.09 dBm 11.58 dBm 1,94002658 GHz 28,580010044 == 2

TM3.1-64QAM_20 MHz Bandwidth



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18:12:29 29.04.2021

Report Number: 104601893BOX-011 Issued: 05/09/2021

Revised: 05/25/2021

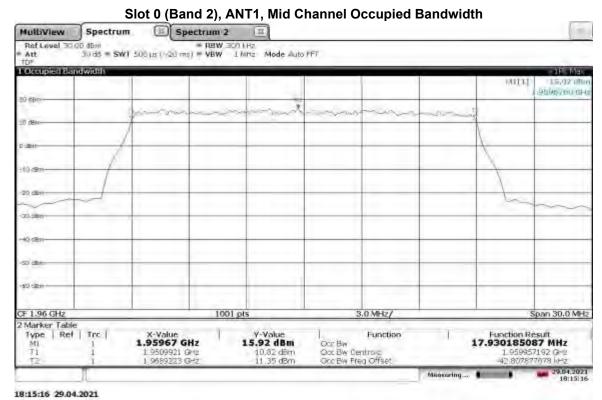
TM3.1-64QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



18:13:51 29.04.2021

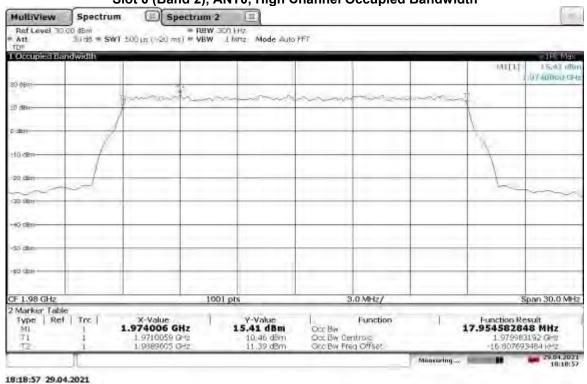
TM3.1-64QAM_20 MHz Bandwidth



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TM3.1-64QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



TM3.1-64QAM_20 MHz Bandwidth

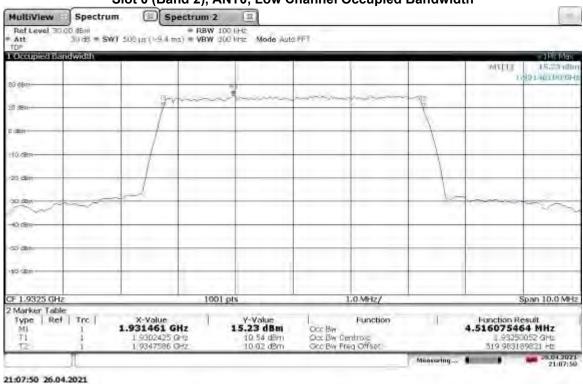
Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = PBW 300 Hz * Att 50 dB = SWT 500 µs (1-20 ms) = VBW 1 Mnz Mode Auto FFT 97 AUDOU GH CF 1.98 GHz 3.0 MHz/ Marker Table Function Result 17.967238472 MHz Type | Ref | Trc | X-Value 1.974006 GHz Y-Value 15.95 dBm Occ Bw Occ Bw Centroic Occ Bw Freq Offset 11.23 dBm 11.71 dBm 1.979968475 G-2 31.525435486 kHz 1.9709849 G-1.9889521 O-18:17:20 29.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 105 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

TM3.1a-256QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



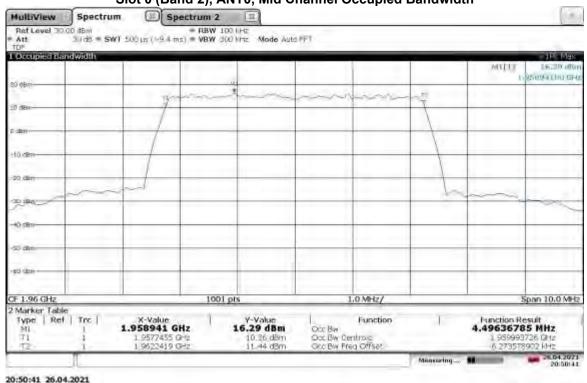
TM3.1a-256QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = RBW 100 iHb * Att 30 dB = SWT 500 µs (+9 4 ms) = VBW 300 kHz Mode Auto FFT SOTHETPO CHO Span 10.0 MHz Marker Table Type | Ref | Trc | X-Value 1.931461 GHz V-Value 15,40 dBm Function Result 4.51565861 MHz Occ Bw Occ Bw Centraic Occ Bw Freq Offset 1,932501008 GHz 1,008480602 kHz 1.9302432 GH 1.9347588 GH 10.67 dBm 10.24 dBm 21:09:22 26.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 106 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

TM3.1a-256QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



TM3.1a-256QAM_5 MHz Bandwidth

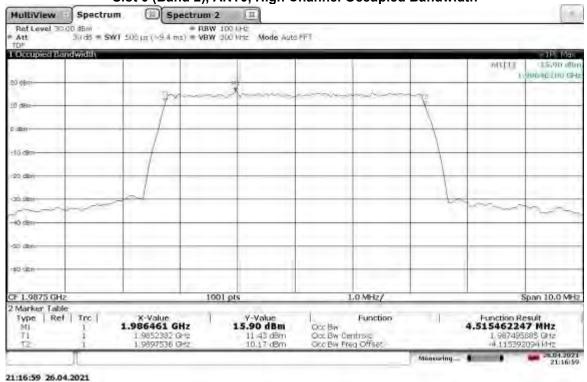
Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = RBW 100 iHz Att 30 dS = SWT 500 µs (+9 4 ms) = VBW 300 kHz Mode Auto FFT CREAPTPO CHO Span 10.0 MHz Marker Table Type | Ref | Trc | X-Value 1.958961 GHz V-Value 16.50 dBm Function Result 4.515278994 MHz Occ Bw Occ Bw Centraic Occ Bw Freq Offset 1.959991816 GHz 8.18364E344 kHz 11,23 dBm 11,11 dBm 21:10:35 26.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 107 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

TM3.1a-256QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



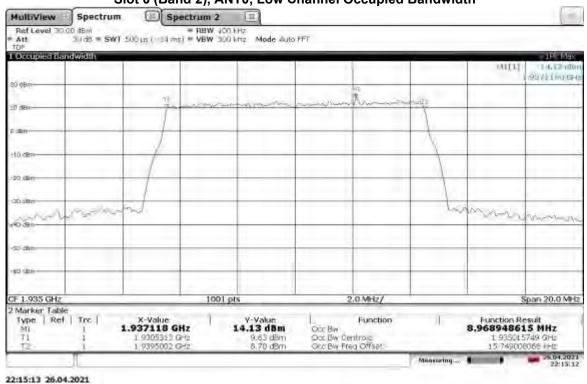
TM3.1a-256QAM_5 MHz Bandwidth

Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = RBW 100 liHz * Att 30 db = SWT 500 µs (49 A ms) = VBW 300 kHz Mode Auto PFT monethn el-F 1.9875 GHz Span 10.0 MHz Marker X-Value 1.986461 GHz V-Value 16.35 dBm Function Result 4.514486115 MHz Type | Ref | Trc | Occ Bw Occ Bw Centraic Occ Bw Freq Offset 10.99 d8m 11.16 d8m 1.987493401 GHz 6 59884824 kHz 1.9852362 GH 1.9897506 GH 21:17:39 26.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 108 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

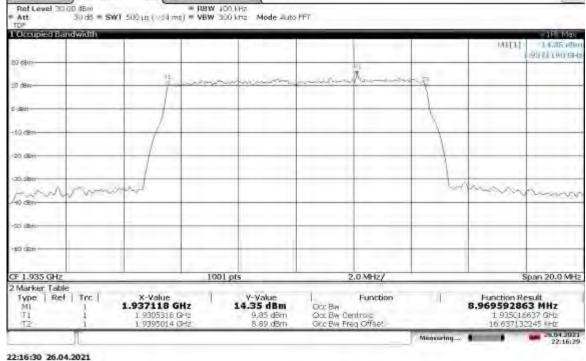
TM3.1a-256QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



TM3.1a-256QAM_10 MHz Bandwidth

MultiView



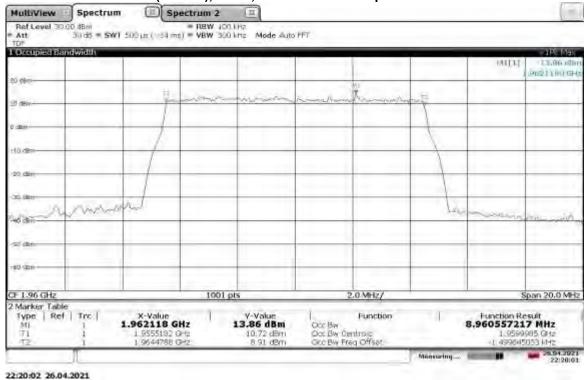
Non-Specific Radio Report Shell Rev. July 2020 Page 109 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Report Number: 104601893BOX-011 Issued: 05/09/2021

Revised: 05/25/2021

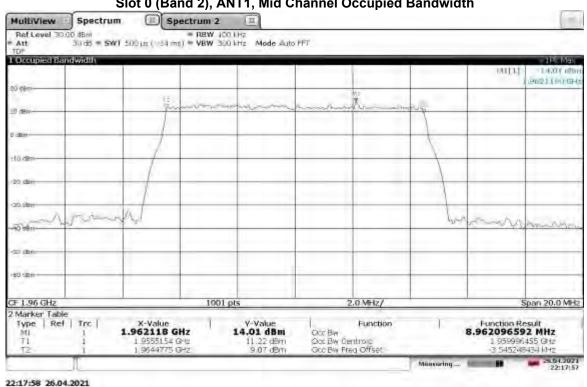
TM3.1a-256QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



TM3.1a-256QAM_10 MHz Bandwidth

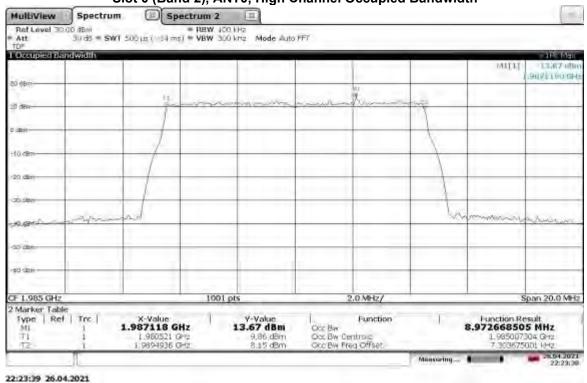
Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth



Non-Specific Radio Report Shell Rev. July 2020 Page 110 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

TM3.1a-256QAM_10 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



TM3.1a-256QAM_10 MHz Bandwidth

| Spectrum | Spectrum

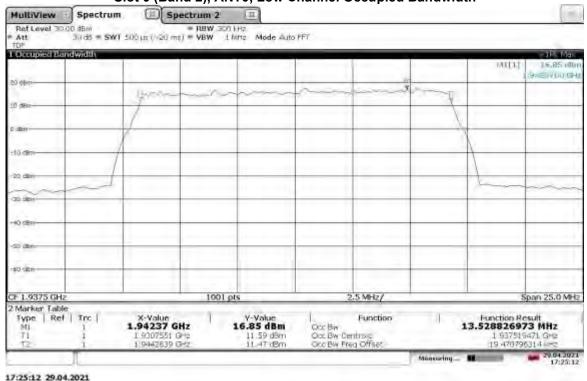
Non-Specific Radio Report Shell Rev. July 2020 Page 111 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Report Number: 104601893BOX-011 Issued: 05/09/2021

Revised: 05/25/2021

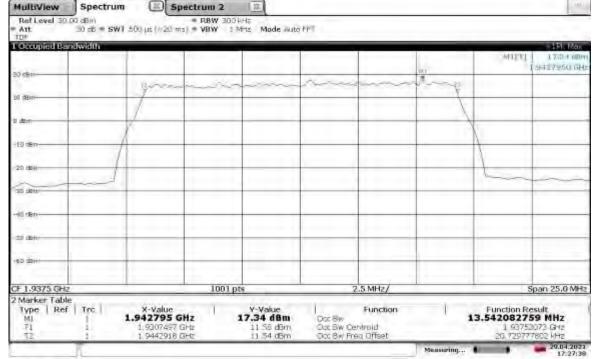
TM3.1a-256QAM_15 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



TM3.1a-256QAM_15 MHz Bandwidth

Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth Spectrum 2



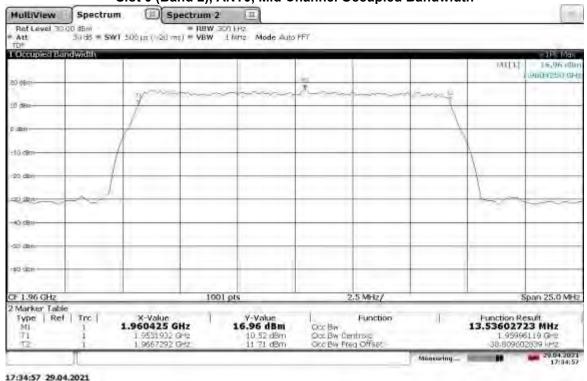
17:27:39 29.04.2021

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Revised: 05/25/2021

TM3.1a-256QAM_15 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



TM3.1a-256QAM_15 MHz Bandwidth

Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = PBW 300 kHz # Att 30 db = SWT 500 µs (1-20 ms) = VBW 1 Mrs Mode Auto FFT 95 11110 03-0 2.5 MHz/ Span 25.0 MHz Marker Table Type | Ref | Trc | X-Value 1.954131 GHz V-Value 17.08 dBm Function Result 13.514877904 MHz Occ Bw Occ Bw Centroic Occ Bw Freq Offset 11:55 d8m 12:00 d8m 17:28:55 29.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 113 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

TM3.1a-256QAM_15 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



TM3.1a-256QAM_15 MHz Bandwidth

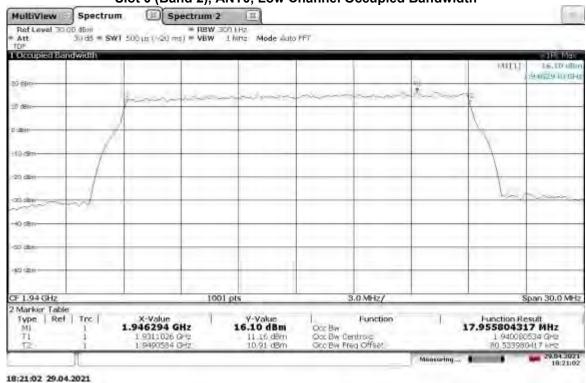
Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dbm = PBW 300 Hz * Att 30 db = SWT 500 µs (1-20 ms) = VBW 1 Mnz Mode Auto FFT 9766010 090 F 1.9825 GHz 2.5 MHz/ Marker X-Value 1.976631 GHz V-Value 16.80 dBm Function Result 13.550049915 MHz Type | Ref | Trc | Oct Bw Oct Bw Centraic Oct Bw Freq Offset 10.91 dBm 1.902481441 GHz 18.559169752 kHz 17:38:13 29.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 114 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

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TM3.1a-256QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, Low Channel Occupied Bandwidth



TM3.1a-256QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT1, Low Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = PBW 300 Hz * Att 30 dB = SWT 500 µs (1-20 ms) = VBW 1 Mnz Mode Auto FFT 9162910 646 Marker Table X-Value 1.946294 GHz V-Value 16.33 dBm Function Result 17.926073742 MHz Type | Ref | Trc | Occ Bw Occ Bw Centraic Occ Bw Freq Offset 11.36 dBm 10.90 dBm 1 940074598 GHz 74 598475399 kHz 18:22:17 29.04.2021

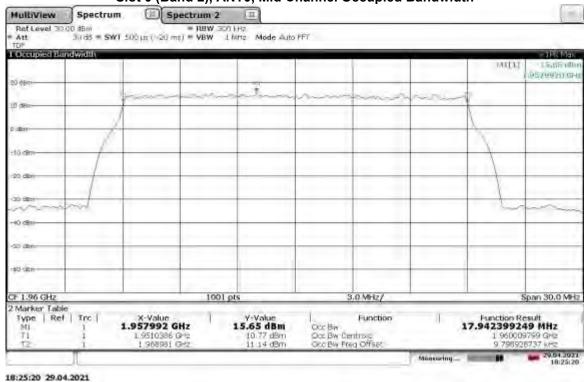
Non-Specific Radio Report Shell Rev. July 2020 Page 115 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Report Number: 104601893BOX-011 Issued: 05/09/2021

Revised: 05/25/2021

TM3.1a-256QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, Mid Channel Occupied Bandwidth



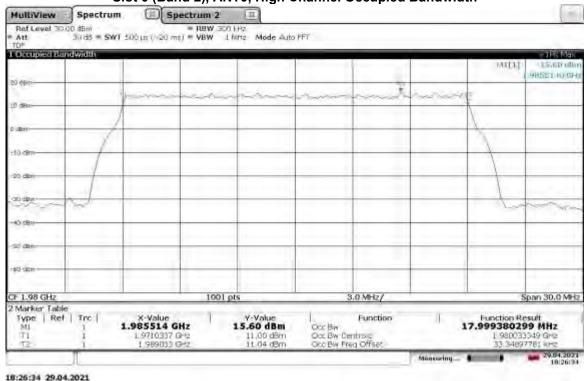
TM3.1a-256QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT1, Mid Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum Ref Level 30.00 dBm = PBW 300 Hz * Att 50 dB = SWT 500 µs (1/20 ms) = VBW 1 Mnz Mode Auto FFT 9655110 64 3.0 MHz/ Marker Type | Ref | Trc | X-Value 1.965514 GHz Function Result 17.959976911 MHz V-Value 15.74 dBm Occ Bw Occ Bw Centraic Occ Bw Freq Offset 11.26 dBm 11.53 dBm 1.960011937 GHz 11,936597958 kHz 18:23:37 29.04.2021

Non-Specific Radio Report Shell Rev. July 2020 Page 116 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

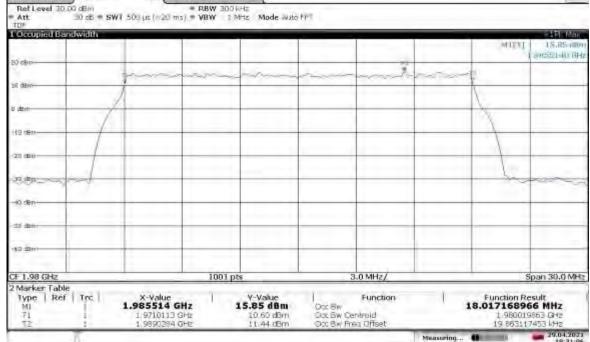
TM3.1a-256QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT0, High Channel Occupied Bandwidth



TM3.1a-256QAM_20 MHz Bandwidth

Slot 0 (Band 2), ANT1, High Channel Occupied Bandwidth Spectrum 2 MultiView Spectrum



18:31:06 29.04.2021

Intertek

Test Date: 04/26/2021 Test Personnel: _Vathana Ven 04/29/2021 Supervising/Reviewing Engineer: (Where Applicable) N/A FCC Part 24 Product Standard: Limit Applied: See report section 7.3 Input Voltage: 48 VDC (POE Pretest Verification w/ Ambient Temperature: 22, 23°C Ambient Signals or BB Source: N/A Relative Humidity: 21, 15% Atmospheric Pressure: 1004, 1013mbars

Deviations, Additions, or Exclusions: None

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Frequency Stability Over Voltages

8.1 Method

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1055 and 24.

TEST SITE: AMAP Lab

8.2 Test Equipment Used:

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due	
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/22/2021	01/22/2022	
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252676002	02/19/2021	02/19/2022	
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021	
DAV005	Weather Station Vantage Vue	Davis	6250	MS191218083	02/07/2021	02/07/2022	

Software Utilized:

Name	Manufacturer	Version
None		

8.3 Results:

The sample tested was found to Comply.

§24.235 Frequency stability – The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block. The occupied bandwidth measurement was used to make sure the lower and upper frequencies of the occupied bandwidth remains within the assigned band of 1930-1990 MHz MHz.

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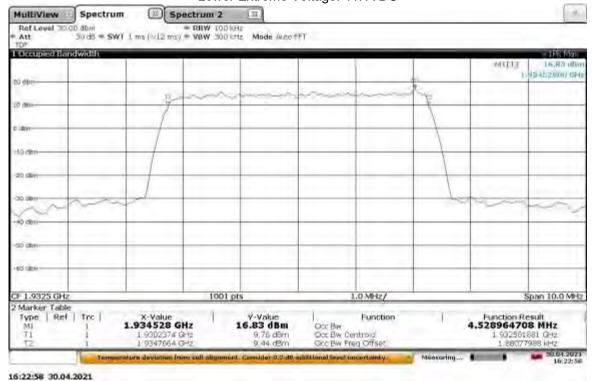
8.4 Setup Photographs:

Confidential

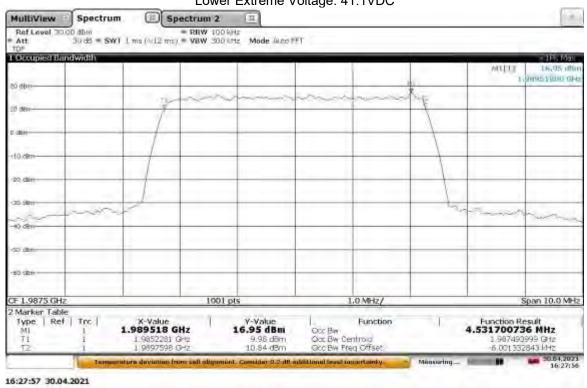
Non-Specific Radio Report Shell Rev. July 2020 Page 120 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

8.5 Plots/Data:

Slot 0 (Band 2), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, Low Channel, Lower Extreme Voltage: 41.1VDC



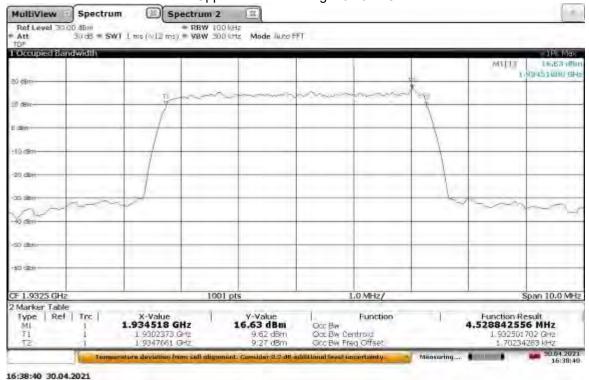
Slot 0 (Band 2), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, High Channel, Lower Extreme Voltage: 41.1VDC



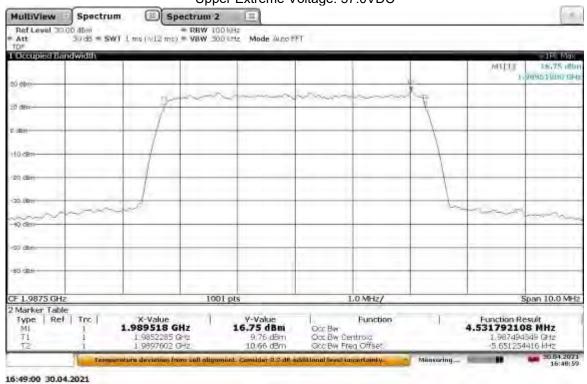
Non-Specific Radio Report Shell Rev. July 2020 Page 121 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

Slot 0 (Band 2), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, Low Channel, Upper Extreme Voltage: 57.0VDC

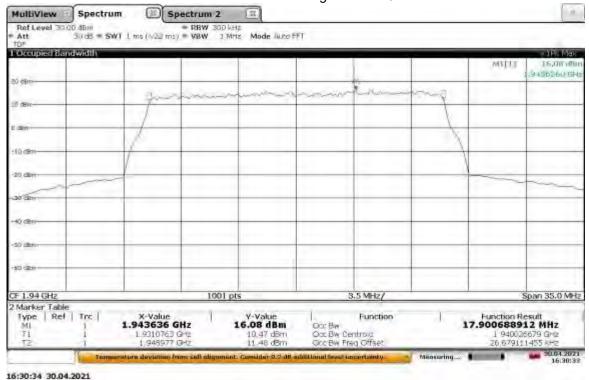


Slot 0 (Band 2), ANT1, Modulation: QPSK, Bandwidth: 5 MHz, High Channel, Upper Extreme Voltage: 57.0VDC

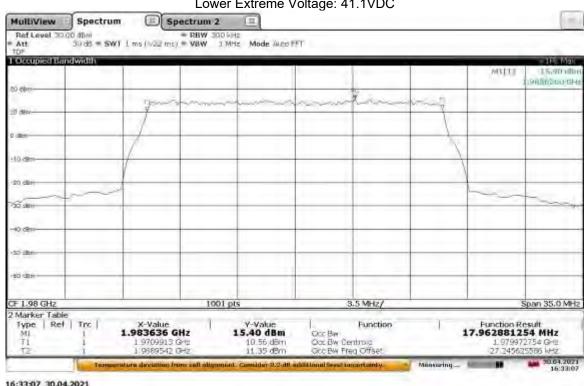


Non-Specific Radio Report Shell Rev. July 2020 Page 122 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

> Slot 0 (Band 2), ANT0, Modulation: QPSK, Bandwidth: 20 MHz, Low Channel, Lower Extreme Voltage: 41.1VDC



Slot 0 (Band 2), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, High Channel, Lower Extreme Voltage: 41.1VDC

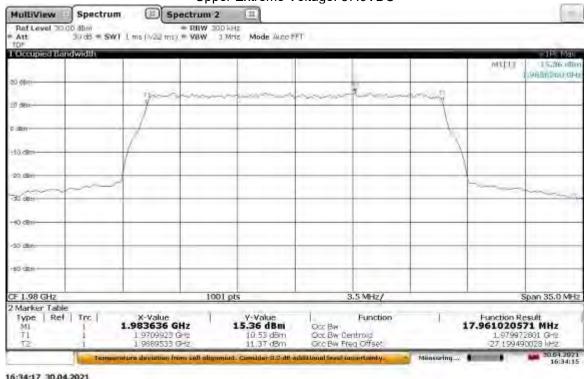


Non-Specific Radio Report Shell Rev. July 2020 Page 123 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

> Slot 0 (Band 2), ANT0, Modulation: QPSK, Bandwidth: 20 MHz, Low Channel, Upper Extreme Voltage: 57.0VDC



Slot 0 (Band 2), ANT0, Modulation: QPSK, Bandwidth: 5 MHz, High Channel, Upper Extreme Voltage: 57.0VDC



Non-Specific Radio Report Shell Rev. July 2020 Page 124 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Intertek

Pretest Verification w/
Ambient Signals or
BB Source: N/A Relative Humidity: 41 %

Atmospheric Pressure: 1011 mbars

Deviations, Additions, or Exclusions: None

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Transmitter spurious emissions

9.1 Method

Tests are performed in accordance with ANSI C63.26 and CFR47 FCC Parts 2.1051, 2.1053, 2.1057, and 24

TEST SITE: EMC Lab & 10m ALSE

The EMC Lab has one Semi-anechoic Chamber and one Shielded Chamber. AC Mains Power is available at 120, 230, and 277 Single Phase; 208, 400, and 480 3-Phase. Large reference ground-planes are installed in the general lab area to facilitate EMC work not requiring a shielded environment.

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

Measurement	Frequency Range	Expanded Uncertainty (k=2)	Ucispr
Radiated Emissions, 10m	30-1000 MHz	4.6dB	6.3 dB
Radiated Emissions, 3m	30-1000 MHz	5.3 dB	6.3 dB
Radiated Emissions, 3m	1-6 GHz	4.5 dB	5.2 dB
Radiated Emissions, 3m	6-15 GHz	5.2 dB	5.5 dB
Radiated Emissions, 3m	15-18 GHz	5.0 dB	5.5 dB
Radiated Emissions, 3m	18-40 GHz	5.0 dB	5.5 dB

As shown in the table above our radiated emissions $U_{{\scriptscriptstyle lab}}$ is less than the corresponding $U_{{\scriptscriptstyle CISPR}}$ reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF - AG

Where FS = Field Strength in $dB\mu V/m$

RA = Receiver Amplitude (including preamplifier) in dB_µV

CF = Cable Attenuation Factor in dB

AF = Antenna Factor in dB AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB $_{\mu}$ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB $_{\mu}$ V/m. This value in dB $_{\mu}$ V/m was converted to its corresponding level in $_{\mu}$ V/m.

RA = $52.0 \text{ dB}_{\mu}\text{V}$ AF = 7.4 dB/mCF = 1.6 dBAG = 29.0 dBFS = $32 \text{ dB}_{\mu}\text{V/m}$

To convert from $dB\mu V$ to μV or mV the following was used:

```
UF = 10^{(NF/20)} where UF = Net Reading in \muV
NF = Net Reading in dB\muV
```

Example:

FS = RA + AF + CF - AG =
$$52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

UF = $10^{(32 \text{ dB}\mu\text{V}/20)} = 39.8 \text{ uV/m}$

Alternately, when BAT-EMC Emission Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". The "Correction" includes Antenna Factor, Preamp, and Cable Loss. These are already accounted for in the "Level" column.

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Report Number: 104601893BOX-011 Issued: 05/09/2021

Revised: 05/25/2021

9.2 Test Equipment Used:

Test equipment used for antenna port conducted test

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
CEN001'	DC-40GHz attenuator 20dB	Centric RF	C411-20	CEN001	02/22/2021	01/22/2022
CBLHF2012-2M-2	2m 9kHz-40GHz Coaxial Cable - SET1	Huber & Suhner	SF102	252676002	02/19/2021	02/19/2022
ROS005-1'	Signal and Spectrum Analyzer	Rohde & Schwarz	FSW43	100646	10/27/2020	10/27/2021
DAV005	Weather Station Vantage Vue	Davis	6250	MS19121808 3	02/07/2021	02/07/2022

Software Utilized:

Name	Manufacturer	Version
None	-	

Test equipment used for Radiated emissions

Asset	Description	Manufacturer	Model	Serial	Cal Date	Cal Due
				MS19121200		
DS42'	Weather Station Vantage Vue	Davis	6250	3	02/24/2021	02/24/2022
145145'	Broadband Hybrid Antenna 30 MHz - 3 GHz	Sunol Sciences Corp.	JB3	A122313	05/07/2020	05/07/2021
PRE11'	50dB gain pre-amp	Pasternack	PRE11	PRE11	09/21/2020	09/21/2021
145108'	Receiver	Rhode & Schwarz	ESIB40	100209	06/08/2020	06/08/2021
HS002'	Pre-amp to under floor cable	Huber & Suhner	SucoFlex 106A	HS002	11/25/2020	11/25/2021
			sucoflex 160-			
145-406'	10m Track A In-floor Cable #1	Huber + Suhner	19220mm	001	07/13/2020	07/13/2021
IW001'	Receiver to floor cable	Insulated Wire	2801-NPS	001	10/07/2020	10/07/2021
IW006'	Pre-amp to antenna cable	Insulated Wire	2800-NPS	IW006	11/25/2020	11/25/2021
PRE12'	Pre-amp, 1-18GHz	Com-Power	PAM-118A	18040117	12/07/2020	12/07/2021
ETS002'	1-18GHz DRG Horn Antenna	ETS Lindgren	3117	00143260	08/03/2020	08/03/2021
145-414'	3m Track A cables	Huber + Suhner	3m Track A cables	multiple	06/25/2020	06/25/2021
IW002'	2 meter Armored cable	Insulated Wire	2800-NPS	002	09/23/2020	09/23/2021
IW003'	8.4 meter cable	Insulated Wire	2800-NPS	003	10/08/2020	10/08/2021

Software Utilized:

Name	Manufacturer	Version
BAT-EMC	Nexio	3.18.0.16

9.3 Results:

The sample tested was found to Comply. Where a resolution bandwidth of less than 1 MHz was used (in some cases, 120 kHz or 100 kHz), more than 10 dB margin to the limit is shown. Since the two antenna ports transmit uncorrelated data streams and use cross polarized antennas, no adjustments to the test results were applied due to MIMO operation, per KDB 662911.

§24.238(a): The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB.

(b) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

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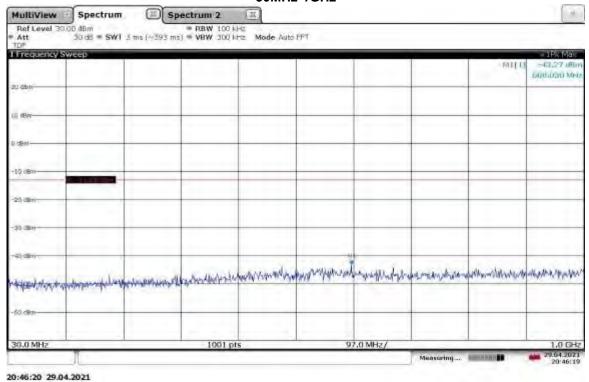
9.4 Setup Photographs:

Confidential

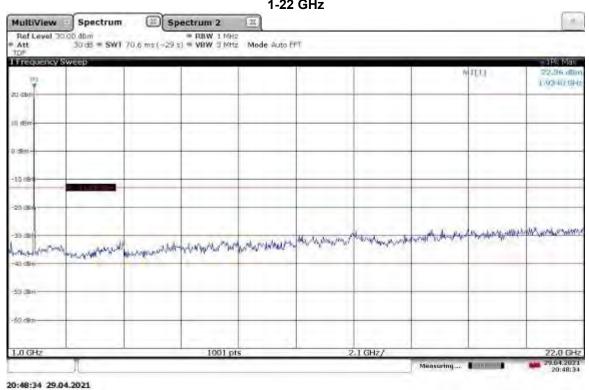
Non-Specific Radio Report Shell Rev. July 2020 Page 129 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

9.5 Plots/Data:

Slot 0 (Band 2), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel 1932.5 MHz 30MHz-1GHz



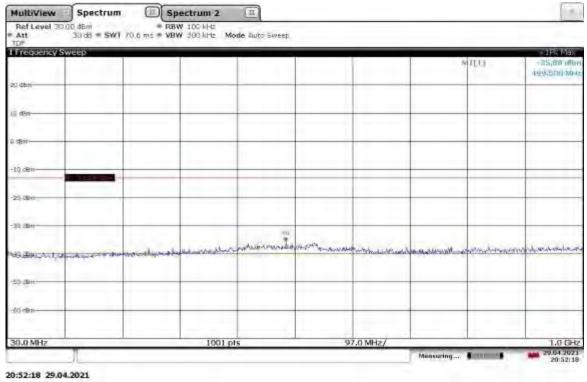
Slot 0 (Band 2), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel 1932.5 MHz 1-22 GHz



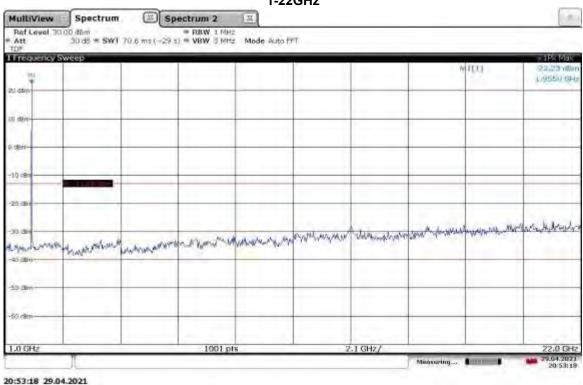
Non-Specific Radio Report Shell Rev. July 2020 Page 130 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

Slot 0 (Band 2), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel 1960 MHz 30MHz-1GHz



Slot 0 (Band 2), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel 1960 MHz 1-22GHz

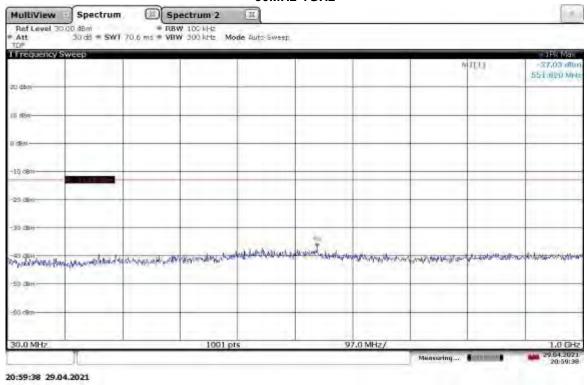


Non-Specific Radio Report Shell Rev. July 2020

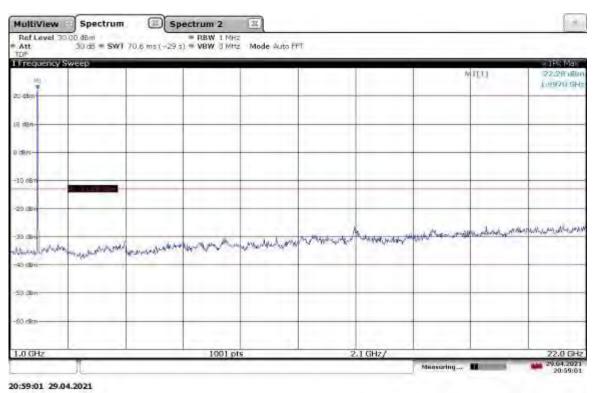
Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

Slot 0 (Band 2), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel 1987.5 MHz 30MHz-1GHz

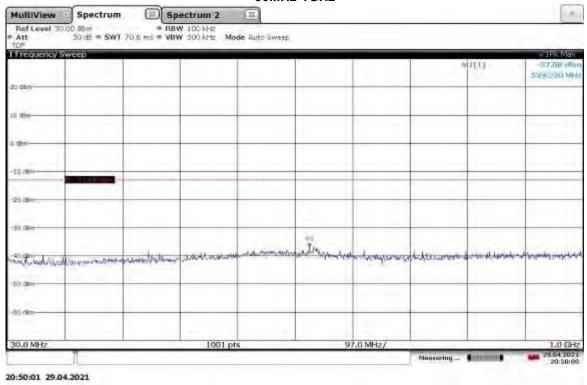


Slot 0 (Band 2), ANT0, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel 1987.5 MHz 1-22GHz

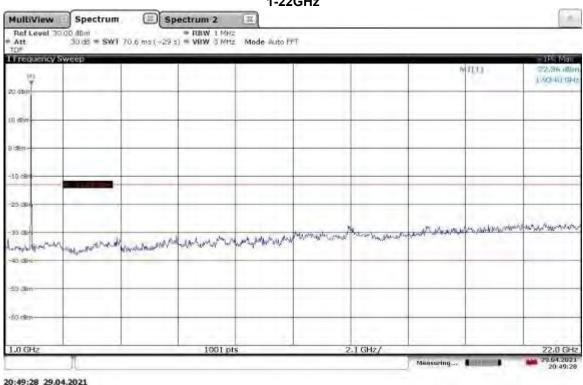


Issued: 05/09/2021 Revised: 05/25/2021

Slot 0 (Band 2), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel 1932.5 MHz 30MHz-1GHz



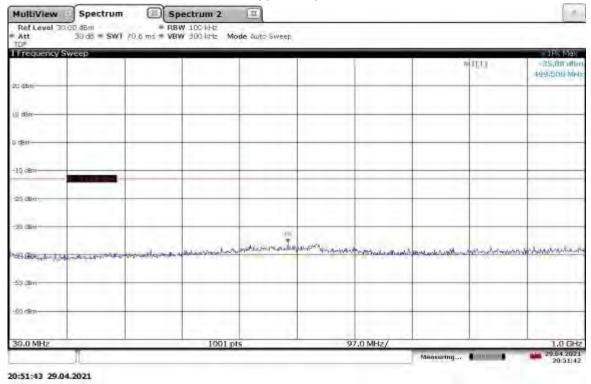
Slot 0 (Band 2), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Low Channel 1932.5 MHz 1-22GHz



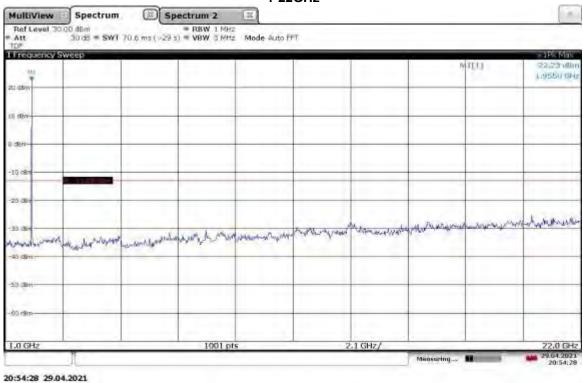
Report Number: 104601893BOX-011 Issued: 05/09/2021

Revised: 05/25/2021

Slot 0 (Band 2), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel 1960 MHz 30MHz-1GHz



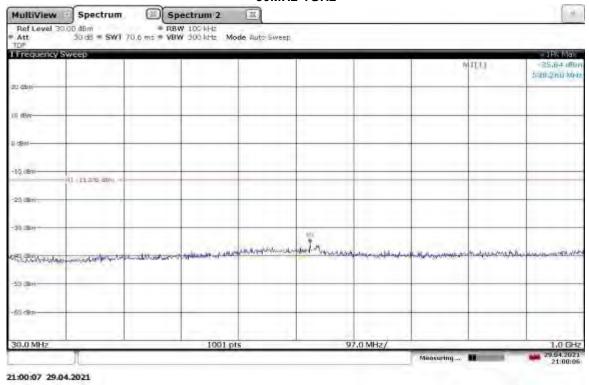
Slot 0 (Band 2), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, Mid Channel 1960 MHz 1-22GHz



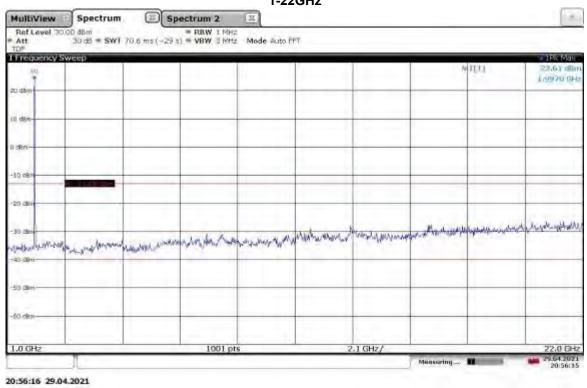
Non-Specific Radio Report Shell Rev. July 2020 Page 134 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Issued: 05/09/2021 Revised: 05/25/2021

Slot 0 (Band 2), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel 1987.5 MHz 30MHz-1GHz



Slot 0 (Band 2), ANT1, Modulation: TM3.1-64QAM, Bandwidth: 5 MHz, High Channel 1987.5 MHz 1-22GHz

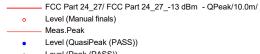


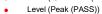
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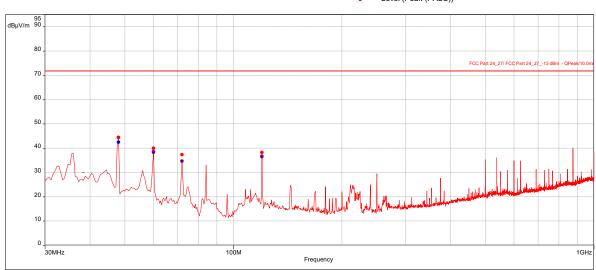
Radiated Emissions, 30-1000 MHz Slot 0 (Band 2), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ Low Channel **Test Information**:

Date and Time	4/30/2021 5:53:22 PM		
Client and Project Number	Commscope_G104601893		
Engineer	Vathana Ven		
Temperature	24 deg C		
Humidity	32%		
Atmospheric Pressure	984 mbar		
Comments	RE 30-1000MHz_POE_Band 2_5MHz BW_TM3.1(worst-case)_Tx Low CH		
	1932.5MHz		

Graph:







Results:

Peak (PASS) (4)

T can (1 7100	7 (- /								
Frequency	Level	Level	Limit	Margin	Azimuth	Height	Pol. (dB)	RBW (dB)	Correction
(MHz)	(dBµV/m)	EIRP	(dBm)	(dB)	(°) (dB)	(m) (dB)	` '	` '	(dB)
(1011 12)	(dbp v/iii)		(ubiii)	(ub)	() (ub)	(III) (GD)			(ub)
		(dBm)							
48	44.39	-40.01	-13.00	-27.01	291.00	1.00	Vertical	120000.00	-24.72
60	39.96	-44.44	-13.00	-31.44	25.00	1.67	Vertical	120000.00	-25.86
72	37.28	-47.13	-13.00	-34.13	55.00	2.18	Vertical	120000.00	-25.22
120	38.17	-46.23	-13.00	-33.23	4.00	1.81	Vertical	120000.00	-18.93
120	30.1 <i>1</i>	-40.23	-13.00	-33.23	4.00	1.01	vertical	120000.00	-10.93

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

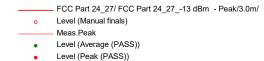
Non-Specific Radio Report Shell Rev. July 2020 Page 136 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

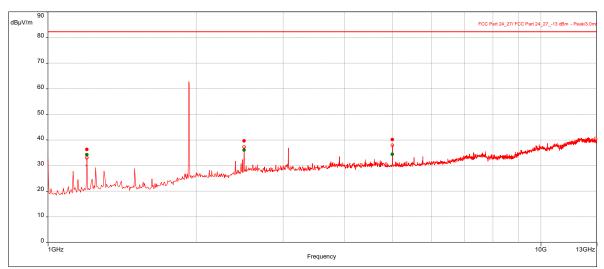
Radiated Emissions, 1-22 GHz Slot 0 (Band 2), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ Low Channel

Test Information:

Date and Time	4/30/2021 9:26:32 PM
Client and Project Number	Commscope_G104601893
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32%
Atmospheric Pressure	984 mbar
Comments	RE 1 to 13 GHz_POE_Band 2_5MHz BW_TM3.1(worst-case)_Tx Low CH
	1932.5MHz

Graph:





Results:

Peak (PASS) (3)

T Cak (I ACC) (3)								
Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
1200	36.30	-48.10	-13.00	-35.10	4.00	3.40	Vertical	1000000.00	-21.36
2500	39.59	-44.81	-13.00	-31.81	231.00	1.05	Horizontal	1000000.00	-14.74
5000	40.16	-44.24	-13.00	-31.24	107.00	1.15	Vertical	1000000.00	-10.24

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

Big peak was a fundamental frequency – scan from 13-22 GHz was performed manually at a close distance. No emissions were detected above the measuring equipment noise floor.

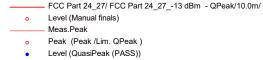
Non-Specific Radio Report Shell Rev. July 2020 Page 137 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

Radiated Emissions, 30-1000 MHz Slot 0 (Band 2), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ Mid Channel

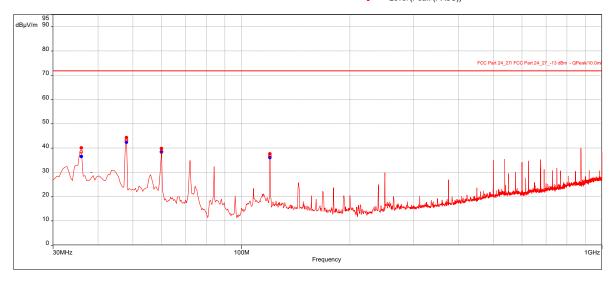
Test Information:

Date and Time	4/30/2021 6:45:35 PM
Client and Project Number	Commscope_G104601893
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32%
Atmospheric Pressure	984 mbar
Comments	RE 30-1000MHz_POE_Band 2_5MHz BW_TM3.1(worst-case)_Tx Mid CH 1960MHz

Graph:







Results:

Peak (PASS) (4)

Frequency (MHz)	Level (dBµV/m)	Level EIRP	Limit (dBm)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
35.96842105	39.97	(dBm) -44.43	-13.00	-31.43	11.00	1.00	Vertical	120000.00	-16.53
48	44.24	-40.16	-13.00	-27.16	290.00	1.00	Vertical	120000.00	-24.72
60	39.74	-44.66	-13.00	-31.66	25.00	1.96	Vertical	120000.00	-25.86
120	37.58	-46.82	-13.00	-33.82	1.00	1.37	Vertical	120000.00	-18.93

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

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Radiated Emissions, 1-22 GHz Slot 0 (Band 2), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ Mid Channel

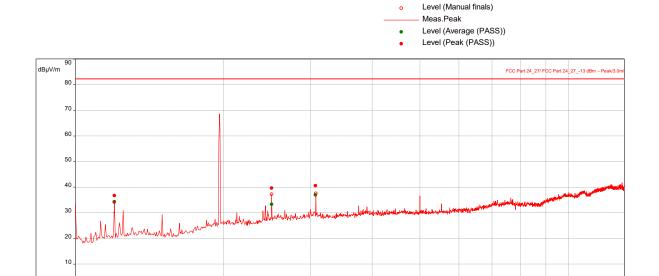
Test Information:

Date and Time	4/30/2021 9:45:12 PM
Client and Project Number	Commscope_G104601893
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32%
Atmospheric Pressure	984 mbar
Comments	RE 1 to 13 GHz_POE_Band 2_5MHz BW_TM3.1(worst-case)_Tx Mid CH 1960MHz

FCC Part 24_27/ FCC Part 24_27_-13 dBm - Peak/3.0m/

13GHz

Graph:



Results:

Peak (PASS) (3)

1GHz

T cak (I Acc) (0)								
Frequency (MHz)	Level (dBµV/m)	Level EIRP (dBm)	Limit (dBm)	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
1200	36.72	-47.68	-13.00	-34.68	12.00	2.10	Vertical	1000000.00	-21.36
2500	39.59	-44.81	-13.00	-31.81	69.00	1.30	Horizontal	1000000.00	-14.74
3071.842105	40.53	-43.87	-13.00	-30.87	4.00	1.30	Vertical	1000000.00	-12.82

Frequency

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

Big peak was a fundamental frequency – scan from 13-22 GHz was performed manually at a close distance. No emissions were detected above the measuring equipment noise floor.

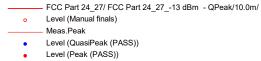
Page 139 of 143 Non-Specific Radio Report Shell Rev. July 2020 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

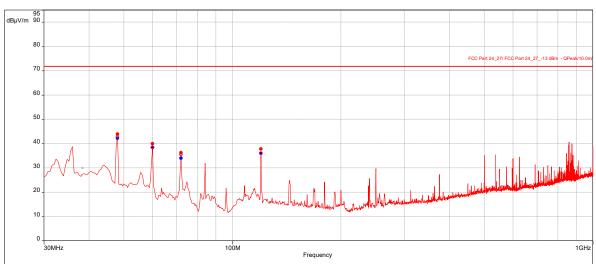
Radiated Emissions, 30-1000 MHz Slot 0 (Band 2), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ High Channel

Test Information:

Date and Time	4/30/2021 7:28:49 PM
Client and Project Number	Commscope_G104601893
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32%
Atmospheric Pressure	984 mbar
Comments	RE 30-1000MHz_POE_Band 2_5MHz BW_TM3.1(worst-case)_Tx High CH
	1987.5MHz

Graph:





Results:

Peak (PASS) (4)

Frequency	Level	Level	Limit	Margin	Azimuth (°)	Height (m)	Pol. (dB)	RBW (dB)	Correction
(MHz)	(dBµV/m)	EIRP	(dBµV/m)	(dB)	(dB)	(dB)			(dB)
		(dBm)							
48	43.91	-40.49	-13.00	-27.49	290.00	1.00	Vertical	120000.00	-24.72
60	39.88	-44.52	-13.00	-31.52	54.00	2.20	Vertical	120000.00	-25.86
72	36.24	-48.16	-13.00	-35.16	25.00	1.05	Horizontal	120000.00	-25.22
120	37.72	-46.68	-13.00	-34.68	0.00	1.88	Vertical	120000.00	-18.93

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

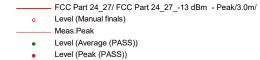
Non-Specific Radio Report Shell Rev. July 2020 Page 140 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200

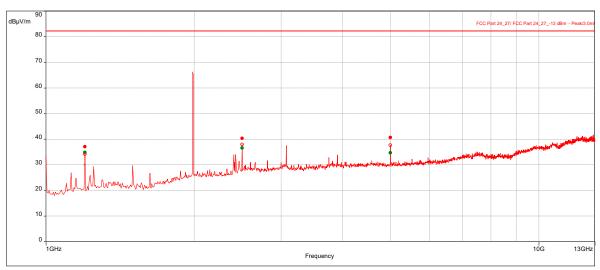
Radiated Emissions, 1-22 GHz Slot 0 (Band 2), Modulation: TM3.1-64QAM, Bandwidth 5 MHz, Transmit @ High Channel

Test Information:

Date and Time	4/30/2021 10:03:50 PM
Client and Project Number	Commscope_G104601893
Engineer	Vathana Ven
Temperature	24 deg C
Humidity	32%
Atmospheric Pressure	984 mbar
Comments	RE 1 to 13 GHz_POE_Band 2_5MHz BW_TM3.1(worst-case)_Tx High CH
	1987.5MHz

Graph:





Results:

Peak (PASS) (3)

FEAR (FASS	,, (3)								
Frequency (MHz)	Level (dBuV/m)	Level (dBm)	Limit EIRP	Margin (dB)	Azimuth (°) (dB)	Height (m) (dB)	Pol. (dB)	RBW (dB)	Correction (dB)
(IVII IZ)	(ασμν/π)	(ubiii)	(dBµV/m)	(db)	() (db)	(III) (GD)			(ub)
1200	37.09	-47.31	-13.00	-34.31	0.00	2.10	Vertical	1000000.00	-21.36
2500	40.31	-44.09	-13.00	-31.09	224.00	1.01	Horizontal	1000000.00	-14.74
5000	40.60	-43.80	-13.00	-29.68	99.00	1.41	Vertical	1000000.00	-10.24

Level EIRP (dBm) = Level Peak (dBuV/m) - 84.4

Big peak was a fundamental frequency - scan from 13-22 GHz was performed manually at a close distance. No emissions were detected above the measuring equipment noise floor.

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Intertek

Test Personnel:
Supervising/Reviewing
Engineer:
(Where Applicable)
N/A

Product Standard:
Input Voltage:

Pretest Verification w/

Pretest Verification w/

Test Date:
04/29/2021
04/30/2021

Limit Applied:
See report section 9.3

Ambient Temperature:
22, 23 °C

Ambient Signals or BB Source: N/A Relative Humidity: 21, 15 %

Atmospheric Pressure: 1004, 1013 mbars

Deviations, Additions, or Exclusions: None

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Intertek

Report Number: 104601893BOX-011 Issued: 05/09/2021 Revised: 05/25/2021

10 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	05/09/2021	104601893BOX-011	VFV	KPS 43	Original Issue
1	05/25/2021	104601893BOX-011	VFV	KPS LPS	Removed test setup photos

Non-Specific Radio Report Shell Rev. July 2020 Page 143 of 143 Client: CommScope Technologies LLC / Model: RPM-A5A11-B02 in new host model RP5200